



LISTEN, Inc.

Transforming Sound into Knowledge

SOUNDCONNECT™ Microphone Power Supply

User's Manual
May 1997

Safety Considerations

SoundConnect has been designed and tested according to IEC Publication 348, Safety Requirements for Electronic Measuring Apparatus, and has been supplied in safe operating condition. This User's Manual contains information and warnings that should be followed by the user to ensure safe and service free operation. Special note should be made of the following:

Application of Power

Before turning on SoundConnect, check that it is set to match the available mains voltage and that the correct fuse is installed.

Safety Symbols



The apparatus will be marked with this symbol when it is important that the user refer to associated warning statements given in the User's Manual.



Hazardous voltage

Warnings

Whenever it is likely that the correct functioning or operating safety of the apparatus has been impaired, the apparatus must be made inoperative and be secured against unintended operation.

Any adjustment, maintenance and repair of the open apparatus under power must be avoided as far as possible and, if unavoidable, must be carried out only by trained service personnel.

Introduction

SoundConnect microphone power supply is designed for use with Brüel & Kjær and compatible microphones and preamplifiers. In addition, SoundConnect can act as a low noise signal amplifier/attenuator (-20 to 60 dB) for optimizing the signal to noise when

used as a front end for measurement equipment.

SoundConnect supplies 120 volts single-ended for traditional B&K preamplifiers and ± 14 volts balanced for the new series of B&K Falcon™ preamplifiers with Lemo connectors. The polarization voltage can be selected (0, 28, or 200V) to match the requirements of different condenser microphones.

Much of today's test instrumentation uses A/D converters and data acquisition boards for converting the input signal into the digital domain. Using SoundConnect's output attenuator and peak level meter it is easy to achieve the full performance from these boards. Three Max Output levels (1, 2, and 5 V_{RMS}) are selectable to match the output from SoundConnect to common full-scale deflection for A/D converters found on these boards.

Operation

Before connecting a mains supply, the following checks and adjustments should be carried out to ensure safe operation of the microphone power supply.

AC Mains Supply and Fuse

SoundConnect is set at the factory to the users specified voltage requirements. The mains voltage setting, however, may be selected by an internal switch. Before accessing the internal voltage selector switch, make sure that the power cord is unplugged from SoundConnect. Remove the two outermost screws (nearest the top and bottom edge) on the rear panel. Locate the voltage selector switch next to the big, blue power torroid. Set to 115 V or 230 V. Replace the cover and check the fuse for the correct rating. 100mA slow blow for 115 V and 50mA slow blow for 230 V.

The power switch is located on the rear of the unit. When the unit is on an amber light illuminates next to "Power On" on the front panel.

Amplifier/Attenuator Settings

There are three, three position sliders marked **A₁**, **A₂**, and **A₃** on the front panel which control the gain/attenuation of the input signal. These three amplifiers/attenuators are cascaded to provide good amplification linearity with a minimum of noise and distortion. It is **important** to remember that the overall gain/attenuation of the system is a summation of these three amplifiers/attenuators;

$$\mathbf{A_1 + A_2 + A_3 = Total Gain}$$

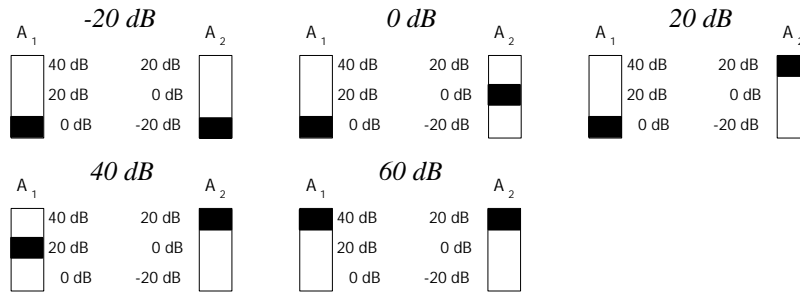
Attenuator, **A₃**, should be set to match the maximum input of you're A/D converter on the front end of your test equipment. This is to prevent damaging your test equipment or data acquisition board and minimize the hard clipping, which occurs when A/D converters are overloaded. This will also assist you in optimizing the dynamic range of

your test equipment by utilizing most of its bits. This will be further discussed in the Peak Level Meter section.

For a lot of hardware-based test equipment with its own input attenuators, A_3 , should be set to 0 dB since this is not necessary. But for many PC data acquisition boards (e.g. sound cards) with an input voltage limit of less than 7.07 Volts peak ($5 V_{RMS}$), A_3 should be set to the closest setting which best matches the data acquisitions board's maximum input voltage specification. If the board's limit falls in between A_3 's settings, select the lower of the two settings.

Amplifiers/attenuator, A_1 and A_2 should be adjusted in unison. For example, setting A_1 to 20 dB and A_2 to -20 dB is the same as setting A_1 to 0 dB and A_2 to 0 dB. Obviously, it is better to choose the later settings to minimize noise. Figure 1 lists the preferred A_1 and A_2 attenuator combinations for optimum signal to noise.

Fig. 1 Preferred Attenuator Settings



Peak Level Meter

The peak level meter consists of four LED's (three green and one red) in the upper right corner of the front panel. The 0 dB green LED corresponds to the peak output level (V_P) as selected by attenuator A_3 . In other words, if A_3 is set to $1.41 V_P$ (-14 dB), the 0 dB green LED will illuminate when the input signal with gain (if any) reaches $1.41 V_P$ ($1 V_{RMS}$).

This is useful for adjusting the signal gain on SoundConnect to maximize the full-scale deflection of your A/D converter on your data acquisition board.

Microphone Preamplifier

SoundConnect comes standard with the traditional Brüel & Kjær 7-pin preamplifier socket or optionally the newer 7-pin LEMO connector. Adaptor ZG 0350 is also available for converting LEMO to traditional 7-pin B&K preamplifier socket.

Fig. 3 LEMO Socket

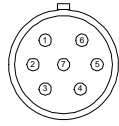


Fig. 2 B&K 7-Pin Socket

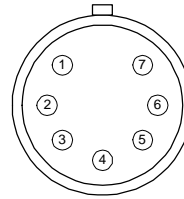


Table 1 Pin Connections for the Two Different Preamplifier Sockets

Pin	LEMO	Brüel & Kjær
1	Not connected	Ground
2	Signal Ground	Polarization voltage
3	Polarization voltage	Not connected
4	Signal input	Signal input
5	Not connected	Power supply positive
6	Power supply positive	Not connected
7	Power supply neg./ground	Not connected
Casing	Connected to instrument chassis	

Polarization Voltage

Just above the preamplifier input socket is a three-position slide switch for selecting 0, 28, or 200 volts microphone polarization. The 0 volt setting is for prepolarized condenser microphones.

Calibration

The ANSI S1.40 standard recommends that a certified calibration laboratory calibrate test instrumentation at least once a year.

Service and Repair

SoundConnect is designed and constructed to provide the user with many years of safe and trouble free operation. However, should a fault occur which impairs its correct functioning and operating safety, then it should be immediately disconnected at the mains source and be secured against unintended operation. For repair, contact your local LISTEN service representative. Under no circumstances should persons not qualified in the service of electronic instrumentation attempt repair.

Specifications

- Input Connectors: BNC in parallel with B&K 7-pin preamplifier or optional LEMO
- Output Connectors: BNC on front panel in parallel with RCA phono on rear panel.
- Frequency range: 20 Hz to 100 kHz (± 0.1 dB)
(-3 dB at 5 Hz and 200 kHz)
- Gain: -20 to 60 ± 0.2 dB in steps of 20 ± 0.1 dB
- Preamplifier supply: 120V @ 2ma single or ± 14 V dual
- Input Noise: $<1.8\mu\text{Vrms}$ (A-weighted), $<3.0\mu\text{Vrms}$ (20 - 20 kHz), @ 20 - 60 dB
- Total Harmonic Distortion: $< 0.005\%$
- Microphone polarization voltage 0, 28, 200 V $\pm 1\%$, Stability better than 0.5% for $\pm 10\%$ variations in mains-voltage
- Input impedance: 1 Megohm
- Output impedance: 600 ohms
- Output attenuator: 0 dB (7.07 V_P), -8 dB (2.82 V_P), -14 dB (1.41 V_P) ± 0.1 dB
- Peak Level Meter: Indication at -20, -10, 0 dB, and overload relative to selected output range ± 0.5 dB.
- Power Requirements: 115/230 VAC $\pm 10\%$ switchable, 50 - 60 Hz, detachable IEC power cord
- Dimensions: 5.5"H (139.7 mm), 2.5" W (63.5 mm), 7.5" D (190.5 mm)
- Weight: 2 lb. (910 g)
- Operating Temperature: 0° to 35° C

Accessories Included

- Power cord
- Spare fuse
- User Manual

Optional Accessories

- Lemo 7-pin preamplifier socket
- Lemo to traditional Brüel & Kjær 7-pin preamplifier socket adapter (ZG 0350)

LIMITED WARRANTY

LISTEN, Inc., a Massachusetts Corporation, having its principal place of business at 107 Jersey Street, Suite 7, Boston, MA 02215 ("Manufacturer") warrants its **SoundConnect Microphone Power Supply** products (the "Products") as follows:

1. **Limited Warranty.**

Manufacturer warrants that the Products sold hereunder will be free from defects in material and workmanship for a period of one (1) year from the date of purchase. If the Products do not conform to this Limited Warranty during the warranty period (as herein above specified), Buyer shall notify Manufacturer in writing of the claimed defects and demonstrate to Manufacturer satisfaction that said defects are covered by this Limited Warranty. If the defects are properly reported to Manufacturer within the warranty period, and the defects are of such type and nature as to be covered by this warranty, Manufacturer shall, at its own expense, furnish, replacement Products or, at Manufacturer's option, replacement parts for the defective Products. Shipping and installation of the replacement Products or replacement parts shall be at Buyer's expense.

2. **Other Limits.**

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Manufacturer does not warrant against damages or defects arising out of improper or abnormal use of handling of the Products; against defects or damages arising from improper installation (where installation is by persons other than Manufacturer), against defects in products or components not manufactured by Manufacturer, or against damages resulting from such non-Manufacturer made products or components. Manufacturer passes on to Buyer the warranty it received (if any) from the maker thereof of such non-Manufacturer made products or components. This warranty also does not apply to Products upon which repairs have been effected or attempted by persons other than pursuant to written authorization by Manufacturer.

3. **Exclusive Obligation.**

THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of Manufacturer shall be to repair or replace the defective Products in the manner and for the period provided above. Manufacturer shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall Manufacturer be liable for incidental, special, or consequential damages.

4. **Other Statements.**

Manufacturer's employees or representatives' ORAL OR OTHER WRITTEN STATEMENTS DO NOT CONSTITUTE WARRANTIES, shall not be relied upon by Buyer, and are not a part of the contract for sale or this limited warranty.

5. **Entire Obligation.**

This Limited Warranty states the entire obligation of Manufacturer with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.