

Headphone Amplifier Box

Precision balanced or unbalanced microphone or line level input
to headphone output

The Headphone Amplifier Box enables a wide range of audio signals to be monitored on standard headphones with negligible interaction on the original signal lines. Input sensitivity can be selected to suit signal levels directly from microphones or line outputs in the range 1 mVolt to 10 Volts RMS. A loop through facility is provided at unity gain.

The use of a transformerless design with close tolerance (0.1%) components ensures good line balance and high common mode rejection performance. Bridged headphone drive maximises the available output level from the 9 Volt PP3 battery, while quiescent power consumption is kept to a minimum for extended operational life. An external power socket allows for mains operation from a standard 9 Volt DC adaptor. High input impedances for the microphone and line level inputs are designed to bridge and not terminate the line being monitored, thus avoiding any level changes. Careful attention to screening and filtering provides protection from radio frequency interference.



The low distortion and noise performance of the design offers a high quality headphone monitoring unit suitable for portable or permanent installation in educational, live music recording, news gathering, public address, entertainment, multimedia and industrial situations.

Typical modes of operation

To monitor a balanced line connect the two signal lines and screen to the input connector using the pin numbers defined in the specification. Unbalanced signal sources can be accommodated by grounding one of the input signal lines and using the other signal line and ground as an unbalanced input (See specifications). The line can be taken from the output connector to the original destination if required (Loop through). The input sensitivity switch is then used to select Mic input for typical microphones or Line for typical line levels. The headphones are plugged into the 0.25 inch jack socket although a range of adaptors are readily available for use with alternative connectors. The jack socket is wired for use with standard 3 pole stereo plugs and both ear pieces are driven together in parallel. A two pole mono jack plug should not be used. The Headphone Level control on the top of the box is a variable gain control which is used to adjust the volume as required.

Some Unusual applications

The versatility of the Headphone Amplifier Box means that it can also be used as a general test instrument for tracing line faults, or giving a quick performance assessment of a suspect microphone. Connected directly to a microphone in this way produces a simple one way intercom system. The wide range of input signal levels catered for enables even speaker lines up to about 100 Watts nominal power level to be monitored without danger of hearing damage by over driving the headphones.

A further application is as a practice amplifier for musical instruments fitted with inductive pickups such as electric guitar or violin. Although lacking any special effects the unit allows private playing of the instrument through headphones without any trailing leads.

Typical Performance Specification

Frequency Response	+/- 0.5 dB from 20 Hz to 20 kHz
Noise	<-60 dBu (Note 1)
Distortion	<0.1% from 20 Hz to 20 kHz into 600 Ohms
Gain Range	
MIC	+20 dB to +60dB
LINE	-20 dB to +20 dB
Common Mode Rejection	>80 dB
Input Common Mode Clipping	>0 dbu
Input Impedance	
MIC	5 kOhms bridging
LINE	Balanced 100 kOhms; Unbalanced 50 kOhms bridging
Input Clipping Level	
MIC	-10 dBu
LINE1	+28 dBu
Output Impedance	<50 Ohm for 100 Ohm to 1 kOhm headphones
Output DC offset	<50 mVolts
Output Clipping Level	+12 dBu into 100R
Connectors	
Input	XLR 3 pin female or 0.25 inch 3 pole A gauge jack combination socket
Output (Loop Through)	XLR 3 pin male
Headphone Output	0.25 inch 3 Pole A gauge jack socket
Pin Connections	
Signal Input and Output	PIN 1 (sleeve) GROUND; PIN 2 (tip) SIGNAL; PIN 3 (ring) RETURN. To unbalance connect PIN 3 to ground
Headphone Output	SLEEVE: COMMON; RING and TIP: SIGNAL
PP3 Alkaline Battery Life	50 Hours
External DC Connector	2.5 mm centre pin positive (Note 2)
Dimensions	Width 80mm, Height 45mm, Depth 135mm
Weight	300gm including battery

Notes to specification

- 1) Measurements of dBu are dB with respect to 0.775 Volts
- 2) The unit may be operated from an external supply between 6 Volts and 12 Volts DC. (Maximum). The recommended voltage is 9 Volts. The supply should be floating and regulated.

Operating Controls

Front Panel

Sensitivity Selector	Two position slide switch
Connectors	Audio input and loop through output; Headphone output

Rear panel

Battery Holder	PP3 externally accessible
Power on/off	Two position slide switch with LED indicator
Connector	External DC supply

Conford Electronics Conford Liphook Hampshire GU30 7QW

01428 751469 confordelec.co.uk