

*the*

# LEON AUDIO

*company*

The Leon Audio Passive DI box is a high performance unit suitable for the most demanding situations in both live and recording applications.

A no-compromise audio isolation transformer designed by The Leon Audio Company provides extremely high sound quality and the maximum possible rejection of external electrical interference, such as dimmer buzz.

The transformer also provides excellent isolation of high *common mode* (earth) voltages, well above the level that an active D.I. box could handle without destruction. Optimised internal design of the isolation transformer provides earth isolation performance approaching the theoretical maximum. This translates into excellent performance when isolating input and output circuits.

An optimally balanced output, provided by the transformer, is ideal for driving long balanced cables, such as multicores. The output can also be connected to unbalanced circuits.

The fully floating balanced input is able to accept either 2 conductor unbalanced circuits via a standard 6.5mm *Tip-Sleeve* jack plug (guitar style plug) or 3 conductor balanced circuits via a *Tip-Ring-Sleeve* 6.5mm jack plug. This enables the D.I. box to be used to *bridge* balanced program lines without causing them to become unbalanced, as would be the case with other D.I. boxes.

An input impedance several times higher than typical commercial units ensures accurate reproduction of a musical instrument by providing minimal electrical loading on the source, which could otherwise result in degraded performance.

High signal level handling ability means that no pad or attenuator switch is required. No batteries or phantom power required.

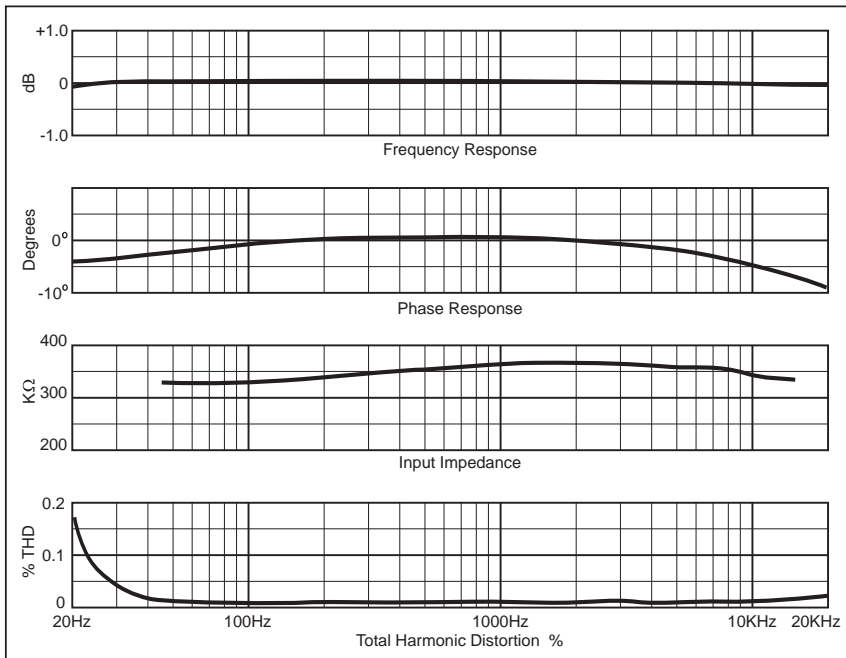
## Direct Injection Box Mk2a Professional Grade Transformer Isolated Passive D.I. Box



### Specifications

All measurements made with 600 ohm source impedance and 2000 ohm load impedance. 0dBu=0.775 Volts

<b>Frequency Response</b>	20Hz - 20kHz $\pm 0.1$ dB
<b>Phase Response</b>	-10° at 20kHz
<b>Nominal Input Impedance</b>	greater than 300K ohms
<b>Recommended Load Impedance</b>	2000 ohms or higher
<b>Maximum Input Level</b>	+26dBu
<b>Output Level</b>	-22dBu (0dBu input)
<b>Total Harmonic Distortion (T.H.D.)</b>	< 0.1%, 30Hz - 20KHz up to +20dBu
<b>Insertion Loss</b>	22dB
<b>Power Supply</b>	None required
<b>Finish</b>	Powder coated die cast aluminium
<b>Weight</b>	440 grams net.
<b>Dimensions</b>	W 95mm H 120mm D 67mm



D.I. Box Response Curves

## What's in a D.I. Box?

D.I. Boxes are constructed using one of two common techniques.

- The first type uses electronic circuitry and are known as *active* D.I. Boxes. They require either Phantom Power or a battery supply.
- The second type uses an audio transformer and are known as either *transformer* or *passive* D.I. Boxes. They require no power supply.

A D.I. box is required to perform three separate basic tasks.

1. *Impedance Conversion*
2. *Unbalanced to balanced conversion*
3. *Earth isolation*

### 1. Impedance Conversion

The medium or high impedance of a signal source is converted to a low impedance suitable for feeding down a long multicore to a mixing desk's microphone input. A low impedance enables long cable runs, with very little

quality loss, and also low susceptibility to external electrical interference which can cause hum and buzzes.

A D.I. box provides a high input impedance for connection to a signal source, and a low output impedance for connection to the microphone input of a mixing desk.

### 2. Unbalanced to balanced conversion

The unbalanced (2 conductor) wiring of a signal source is converted to the balanced (3 conductor) wiring of a mixing desk's microphone input.

A balanced cable provides good rejection of electrical interference, while an unbalanced cable does not.

Active D.I. Boxes are potentially capable of providing excellent unbalanced to balanced conversion, but due to cost restrictions, most are poor performers in this area.

Passive D.I. Boxes provide excellent unbalanced to balanced conversion.

### 3. Earth isolation

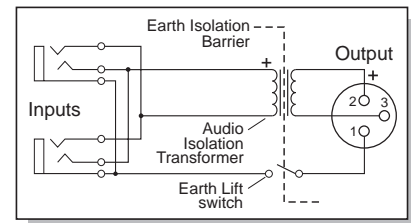
A D.I. Box provides isolation between the earth wiring of a signal source (e.g. musical instrument) and the sound system to which it is being connected. This prevents *earth loops* from occurring.

An earth loop occurs when a device, such as a keyboard, is connected to the *mains earth* via more than one path. The first path is via the instrument's own power cable to the mains earth. The second path is via the interconnecting audio cable to the sound system, then via the sound system's power cable to the main's earth. The resultant circulating earth current is amplified and is often heard as a hum or buzz.

Active D.I. Boxes are usually very poor at providing good earth isolation, because there is a direct electrical path between the instrument and the sound system, even if its *earth lift* switch is lifted. There is no isolating device, such as a transformer, as there is in a passive D.I.

### Earth Lift Switches.

D.I. boxes have an *earth lift* switch to allow the input and output earths of the D.I. box to be disconnected, so that earth loops can be broken. Disconnecting the *signal* (audio) earth is not a safety issue, as the *Protective Earths* in all the mains cables are still connected and fully functional.



D.I. Box Earth Isolation Barrier

- If the instrument is connected to the mains earth, *open* the Earth Lift Switch.
- If there is *no* mains earth connected to the instrument, *close* the Earth Lift Switch.

This assumes that the sound system or mixer is connected to the mains earth, as it should be.

## Warranty

The Leon Audio Passive D.I. Box is guaranteed for one year from date of original purchase against defects in workmanship and materials. If such malfunction occurs, the item will be repaired or replaced (at our option) without charge for materials or labour if delivered prepaid to THE LEON AUDIO COMPANY. Unit will be returned prepaid. Warranty does not cover finish or malfunction due to abuse or operation at other than specified conditions. Repairs by other than THE LEON AUDIO COMPANY or authorised agents will void this guarantee.



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