

dB12

ACTIVE DIRECT BOX

Owner's Manual



PROFESSIONAL PRODUCTS

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 A Harman International Company

18-0556-A

DECLARATION OF CONFORMITY

Manufacturer's Name: dbx Professional Products
Manufacturer's Address: 8760 S. Sandy Parkway
Sandy, Utah 84070, U.S.A.

declares that the product:

Product name: dB12
Product option: None

conforms to the following Product Specifications:

Safety	IEC 60065 (7th ed. 2001) Not applicable, SELV Device
EMC	EN 55013 (2001+A1) EN 55020 (1998)

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC as amended by Directive 93/68/EEC.

Director of Engineering - dbx
8760 S. Sandy Parkway
Sandy, Utah 84070, U.S.A.
Date: February 21, 2008

European Contact: Your local dbx Sales and Service Office or

Harman Music Group
8760 South Sandy Parkway
Sandy, Utah, 84070 U.S.A.
Ph: (801) 566-8800
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Warning

For your protection, please read the following:

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Do not use this apparatus near water.
5. Clean only with dry cloth.
6. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
9. Unplug this apparatus during lightning storms or when unused for long periods of time.
10. No user serviceable parts inside. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
11. WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
12. Refer to labels on the unit, including bottom cover, or other markings and pertinent information.

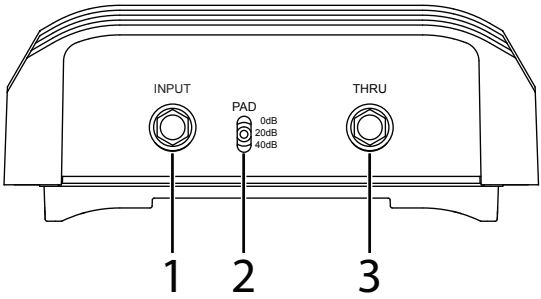
Introduction

Congratulations on your purchase of the dB12 Active Direct Box. The dB12 offers all the benefits of a premium-quality Direct Box while preserving the sonic integrity and true characteristics of the signal source with its custom dbx mu-metal-shielded audio transformer, high-quality Neutrik® connectors, and low-noise circuitry. The dB12 includes a pad switch for instrument, line and even speaker level signals. And you can take even more control of your sound by utilizing the polarity invert switch to set the phase relationship between the direct and mic'd sound.

The dB12 Features

- Premium Performance
- Rugged Design
- Stackable Chassis with Durable Rubber Foot
- Gold-plated Neutrik® XLR Connector
- Premium Chrome Toggle Switches
- Hi-Z ¼" Input Jack
- Parallel ¼" Thru Jack
- Transformer Isolated
- Premium Shielded Custom dbx Transformer
- Balanced XLR Lo-Z Output
- 3-Way 0/20/40 dB Pad Switch
- Flat/High-Cut Filter Switch
- Output Polarity Invert Switch
- Ground Lift Switch
- Green LED Phantom Power Indicator
- +48V Phantom Powered Operation
- Low-Noise Active Circuitry

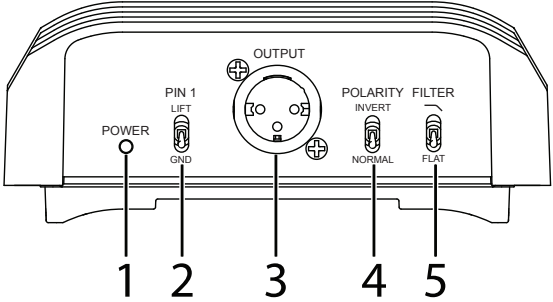
Front Panel



Front Panel

1. **INPUT**
Connect your signal source to this 1/4" unbalanced T/S connector.
2. **PAD**
Select a 0dB, 20dB, or 40dB pad with this switch. Allows connection to a wide range of input signal levels.
3. **THRU**
Connect your onstage amplifier here (optional). This 1/4" unbalanced T/S connector is wired in parallel with the input.

Rear Panel



Rear Panel

1. **POWER LED**
Lights when receiving power from phantom power.
2. **PIN 1 (LIFT/GND)**
By switching to the LIFT position, the internal connection to the output pin 1 is removed, isolating the dB12's grounding system from the rest of the system. This eliminates many "hum" or "buzz" problems due to ground loops.
3. **OUTPUT**
Connect this balanced XLR connector to an XLR input on your mixer.
4. **POLARITY (INVERT/NORMAL)**
When in the INVERT position, this switch swaps pin 2 and pin 3 of the XLR jack, making pin 3 hot.
5. **FILTER (/ FLAT)**
When in the " / " (filter) position (and the PAD switch is set to 40 dB), this switch applies a high cut filter to roll off high frequencies (commonly used in conjunction with the 40 dB pad on an amplifier output signal to roughly duplicate the sound of a mic'd speaker).

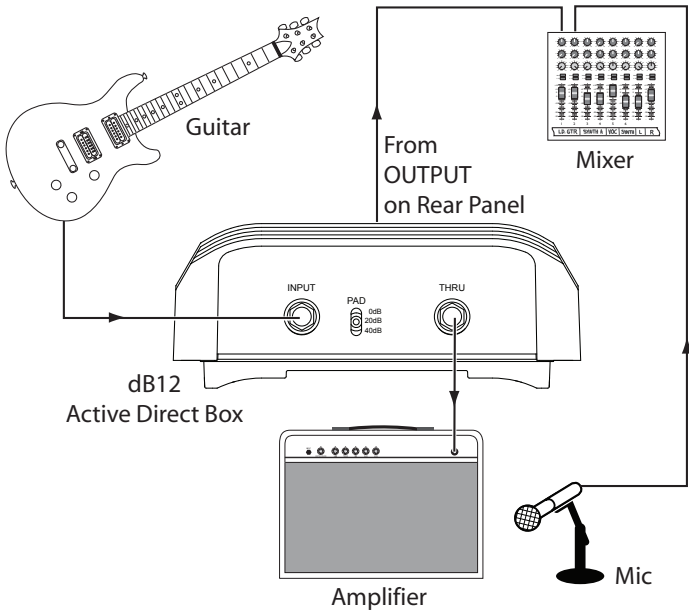
What Does a Direct Box Do?

First, a direct box converts the audio signal originating from an unbalanced device (like a guitar) to a balanced audio signal for transmission over a longer distance than is recommended for an unbalanced signal to travel. As audio industry people know, the advantage of a balanced signal is realized at the receiving end (audio input) of the balanced cable, typically in the form of a mic pre-amp input on a mixing console. The mic pre input circuitry consists of a “differential amplifier” whose job it is to “accept” the audio portion of input signal and “reject” the noise portion of the signal. The noise portion happens to be roughly equivalent on (or “common to”) both the “+” and “-” balanced conductors in the mic cable, since external electromagnetic fields are induced onto both conductors in a roughly similar fashion. Since the conductors are always in a “twisted pair” configuration, they “see” the same noise field. Thus, this is known as “common-mode noise”. Another type of common-mode noise somewhat evenly-induced onto both conductors is due to the inherent physics of connecting two pieces of equipment together and the resulting flow of electrons due to noise voltages present at each piece of equipment. The ability of a balanced input to reject common-mode noise is measured in dB and called its “common-mode rejection ratio”, or CMRR.

The second function of a direct box is to convert from a high-impedance output – on an instrument such as electric guitar with passive pickups, for instance – to a low-impedance output. A cable driven by a high-impedance output is more susceptible to signal loss and noise pickup than a cable driven by a low-impedance output. Thus, using a direct box again improves, for a different reason, the ability to run longer distances due to the impedance conversion from high to low-impedance.

Third, at the heart of the direct box is an isolation transformer that allows complete “galvanic” isolation, if desired, between the equipment plugged into either end. This eliminates the hum and buzz present in the system due to ground loops.

Example Setup 2: Direct guitar signal and amped signal on two mixer channels



Technical Support

If you require technical support, contact dbx Customer Service. Be prepared to accurately describe the problem. Know the serial number of your unit - this is printed on a sticker attached to the bottom panel. If you have not already taken the time to fill out your warranty registration card and send it in, please do so now.

Before you return a product to the factory for service, we recommend you refer to the manual. Make sure you have correctly followed installation steps and operation procedures. If you are still unable to solve a problem, contact our Customer Service Department at (801) 568-7660 for consultation. If you need to return a product to the factory for service, you MUST first contact Customer Service to obtain a Return Authorization Number.

No returned products will be accepted at the factory without a Return Authorization Number.

Please refer to the Warranty information on the following page, which extends to the first end-user. After expiration of the warranty, a reasonable charge will be made for parts, labor, and packing if you choose to use the factory service facility. In all cases, you are responsible for transportation charges to the factory. dbx will pay return shipping if the unit is still under warranty.

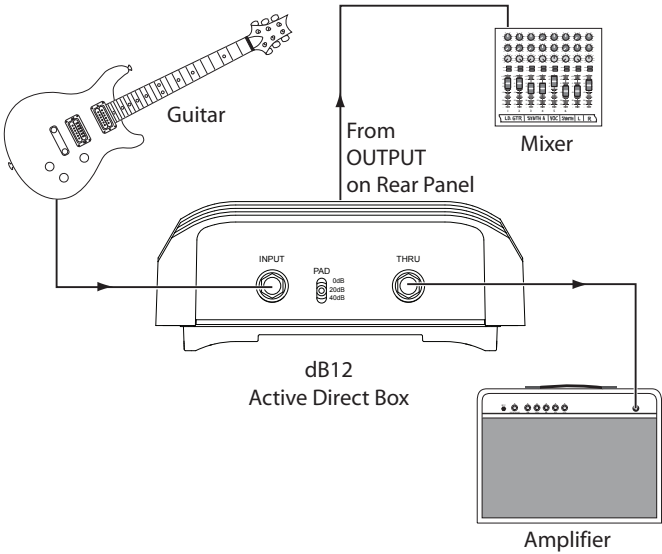
Use the original packing material if it is available. Mark the package with the name of the shipper and with these words in red: DELICATE INSTRUMENT, FRAGILE! Insure the package properly. Ship prepaid, not collect. Do not ship parcel post.

Warranty

This warranty is valid only for the original purchaser and only in the United States.

1. The warranty registration card that accompanies this product must be mailed within 30 days after purchase date to validate this warranty. Proof-of-purchase is considered to be the burden of the consumer.
2. dbx warrants this product, when bought and used solely within the U.S., to be free from defects in materials and workmanship under normal use and service.
3. dbx liability under this warranty is limited to repairing or, at our discretion, replacing defective materials that show evidence of defect that are not due to normal wear and tear and/or improper handling by the user, provided the product is returned to dbx WITH RETURN AUTHORIZATION from the factory, where all parts and labor will be covered up to a period of four years. A Return Authorization number must first be obtained from dbx by telephone. The company shall not be liable for any consequential damage as a result of the product’s use in any circuit or assembly.
4. dbx reserves the right to make changes in design or make additions to or improvements upon this product without incurring any obligation to install the same additions or improvements on products previously manufactured.
5. The foregoing is in lieu of all other warranties, expressed or implied, and dbx neither assumes nor authorizes any person to assume on its behalf any obligation or liability in connection with the sale of this product. In no event shall dbx or its dealers be liable for special or consequential damages or from any delay in the performance of this warranty due to causes beyond their control.

Example Setup 1: Guitar signal sent to amp and PA/Mixer



Special Functions

Polarity Invert

The polarity function is used in situations where the direct box is used as a splitter, and two “sort-of parallel” signals are fed to two mixer channels to be perhaps panned left and right for a nice stereo sound. Flipping the Polarity Invert function will change the phase relationship between the two signals and will typically result in significantly different-sounding results.

A typical example would be to plug a guitar into the input of the direct box, then feed the signal directly back out the Thru jack and into the guitar amp. Then the guitar amp would either be mic’d and sent to one mixer input channel, or a direct output on the guitar amp would be sent to the mixer channel. The output of the direct box would be fed into a second mixer input channel, and the Polarity Invert switch position would then be selected based on preference on how it sounds. In the situation where the amp is mic’d, the position of the mic away from the guitar amp speaker also affects the exact phase relationship between the two guitar signals as well.

Filter

When a guitar amp is mic’d, not only does the guitar amp speaker not reproduce high frequencies, but the mic typically does not reproduce high frequencies well either at these loud levels. Thus, a mic’d guitar amp has significantly subdued “high-end”. Since the 0 / 20 / 40 dB pad feature allows input connection directly from the speaker output of a guitar amp or power amp* when switched to the 40 dB pad position, the Hi-Cut filter is used in conjunction with the 40 dB pad on an amplifier output signal to roughly duplicate the sound of a mic’d speaker. Otherwise the signal would have much more high frequency content and would sound “tinny” in comparison.

NOTE: The Filter switch only works when the Pad switch is set to 40 dB.

* See the maximum input level specification.

Specifications

Circuit Type:	Active
Input: Number of Connectors: Connection: Type: Attenuation Pad: Filter: Max Input Level (0 dB Pad): (20 dB Pad): (40 dB Pad): Input Impedance (0dB): (-20dB): (-40dB):	1 1/4” TS (Tip Hot, Sleeve Ground) Unbalanced, RF Filtered Switchable: 0, 20, 40 dB Switchable: Low Pass @ 6 kHz (40 dB pad position only) +10 dBu typical @ 1 kHz with <1% THD +30 dBu typical @ 1 kHz with <1% THD +33 dBu 1 MΩ 65 kΩ 70 kΩ
Outputs: Number of Connectors: Main Output: THRU Output: Main Output Impedance: Main Output CMRR (60 Hz): (1 kHz): (10 kHz) Output Polarity:	2 Male XLR, Balanced, Pin 2 hot 1/4” Unbalanced TS (Tip Hot, Sleeve Ground) 600 Ω typical, balanced 106 dB typical @ 60 Hz 123 dB typical @ 1 kHz 108 dB typical @ 10 kHz Switchable: Normal / Invert
Performance: Bandwidth: Frequency Response: Phase Deviation (Input ÷ Output): Insertion Loss: Harmonic Distortion (THD+N):	20 Hz to 20 kHz +0/-2 dB typical with 600 Ω load 20 Hz to 20 kHz +0/-1 dB typical with 2 kΩ or higher load 16 Hz to 30 kHz, -3 dB, with 600 Ω Load 10 Hz to 70 kHz, -3 dB, with 2 kΩ or higher load +40 deg @ 20 Hz, -20 deg @ 20 kHz into 2 kΩ load 1 dB typical 0.03% typical @ 50 Hz, 0 dBu 0.003% typical @ 1 kHz, 0 dBu 0.005%typical @ 10 kHz, 0 dBu -112 dBu, 22 Hz to 22 kHz, unweighted 122 dB, 22 Hz to 22 kHz, unweighted
Noise Floor: Dynamic Range:	 +48 V Phantom Power < 8 mA Switchable: Ground / Lift
Power Supply: Voltage: Current: Ground:	
Physical: Size (L x W x H): Weight: Construction: Finish:	5.82” X 5.44” X 2.20” 1.5 lbs. (0.68 kg) Metal Casting Powder Coat



If you want to dispose this product, do not mix it with general household waste. There is a separate collection system for used electronic products in accordance with legislation that requires proper treatment, recovery and recycling.

Private household in the 25 member states of the EU, in Switzerland and Norway may return their used electronic products free of charge to designated collection facilities or to a retailer (if you purchase a similar new one).

For Countries not mentioned above, please contact your local authorities for a correct method of disposal.

By doing so you will ensure that your disposed product undergoes the necessary treatment, recovery and recycling and thus prevent potential negative effects on the environment and human health.