



## Radial engineering J48 1-channel Active 48v Direct Box User Guide

[Home](#) » [Radial engineering](#) » Radial engineering J48 1-channel Active 48v Direct Box User Guide 



J48 STEREO USER GUIDE  
JENSEN TRANSFORMER EQUIPPED  
ACTIVE 48V PHANTOM POWERED DIRECT BOX  
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## Contents

- 1 J48 STEREO DIRECT BOX USER GUIDE**
- 2 FEATURES**
- 3 GROUND LOOPS**
- 4 USING THE HIGH-PASS FILTER**
- 5 OPTIONAL RACK MOUNTING KITS**
- 6 SPECIFICATIONS**
- 7 BLOCK DIAGRAM**
- 8 RADIAL ENGINEERING 3 YEAR TRANSFERABLE WARRANTY**
- 9 Documents / Resources**
- 10 Related Posts**

## J48 STEREO DIRECT BOX USER GUIDE

Introduction .....	1
J48 Stereo Features .....	2
Making Connections .....	3
Using the PAD .....	4
Using the Ground Lift.....	4
Using Various Instruments .....	5
Examples .....	6
Using the High-pass Filter .....	7
Using the Polarity Reverse .....	7
Optional mounting accessories .....	8
Specifications .....	9
Block diagram .....	10
Radial Limited Warranty .....	Back Cover



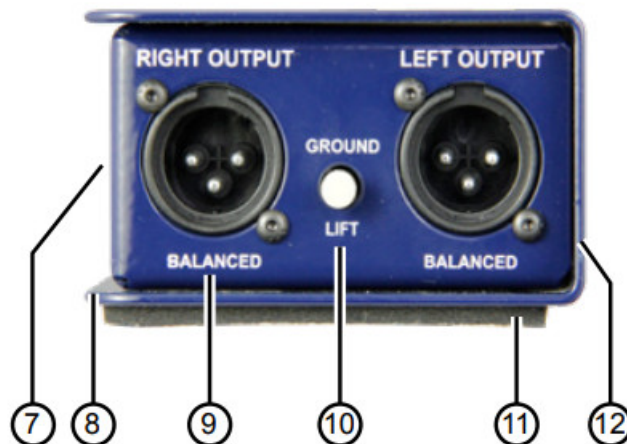
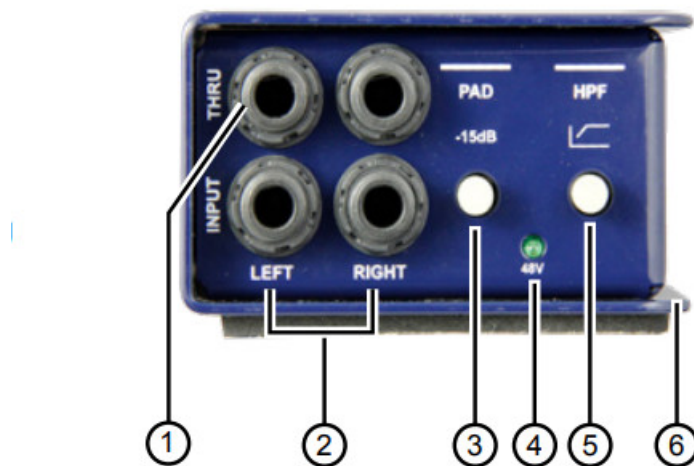
Thank you for purchasing the Radial J48 Stereo. This wonderful active direct box employs a unique internal switching supply that employs 48 volt phantom power and steps it up to increase the signal handling while it lowers distortion of all types. Part of the magic behind the design is that it enables the user to lift the audio ground connection to eliminate noise without disconnecting the 48V phantom power source. This means that you can

enjoy the benefits of an active direct box without having to resort to batteries or some form of external power supply. This makes the J48 Stereo a very effective DI box for all types of instruments in both live stage and studio recording applications.

The J48 Stereo is in fact a very easy to use direct box that is purpose-made to be compact and quick to deploy. You simply plug it in, turn on the phantom power and it goes to work. There are however a number of features built in that should be understood in order to get the most out of your J48. So please take a few minutes to go through this user guide to ensure you get the most out of it. If after you have read it, you find yourself asking questions; please visit the FAQ section of the web page. This is where we post updates and questions from users. If you still do not find the answer or need further clarification, we invite you to send us an email at [info@radialeng.com](mailto:info@radialeng.com) and we will do our very best to reply in short order.

Now get ready to enjoy the world's finest phantom powered active direct box!

## FEATURES



1. 1/4" THRU-PUTS: Left and right parallel outputs used to connect the hi-Z instrument signal to an amplifier, tuner or personal monitoring system.
2. 1/4" INPUTS: Left and right unbalanced, hi-Z inputs used to connect instruments.
3. -15dB PAD: Reduces the input sensitivity to prevent overload.
4. +48V: LED indicator will glow when the J48 Stereo is receiving phantom power.
5. HPF: High-pass filter switch gently rolls off bass to remove rumble and resonant feedback (-3dB @ 80Hz).
6. BOOKEND DESIGN: Creates a protective zone around the switches and connectors.
7. 180° POLARITY (side panel): Reverses the polarity of the RIGHT XLR output by toggling pins-2 and 3.

8. I-BEAM REINFORCED: 14-gauge steel enclosure with rigid I-beam construction makes it impossible to torque the PC board.
9. XLR OUT: Left and right balanced, low impedance mic level output. Wired to AES standard (pin-2 hot).
10. GROUND LIFT: Disconnects the ground from the audio signal path and helps eliminate hum and buzz caused by ground loops.
11. NO SLIP PAD: Provides electrical and mechanical isolation and keeps the J48 Stereo from sliding around.
12. POWDER COAT FINISH: Durable finish keeps your J48 Stereo looking great for years.

## OVERVIEW

The Radial J48 Stereo is an active direct box that derives its power from the 48 volt phantom supply from the mixing console or mic preamp. You simply plug in and it will quietly go to work.

## MAKING CONNECTIONS

As with all audio gear, always ensure audio system levels are turned down or equipment turned off before making connections. This will avoid plug-in or turn-on transients from damaging more sensitive components such as tweeters.

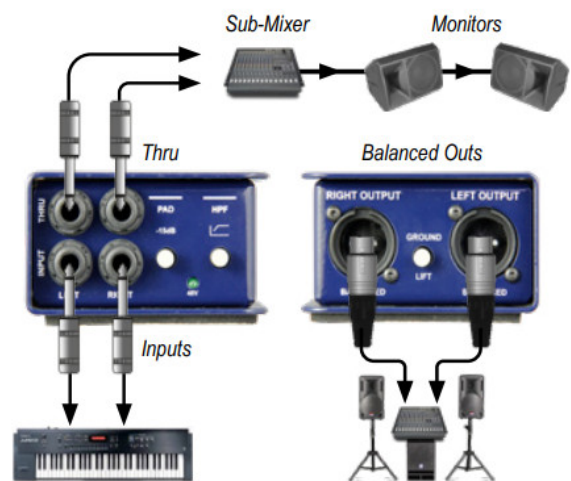
There are two channels on the J48. These are identical and feature a 1/4" INPUT, a 1/4" THRU-put and a balanced XLR out.

Connect your source instrument to the input and the balanced XLR out to the PA system or recorder. The THRU connector output provides the means for connecting the signal to a stage amp or personal monitor system. Simply connect the THRU to your amp or monitor. Unbalanced cables are much more susceptible to noise than their balanced counterparts.

Keeping unbalanced cables under 8 meters (25') in length is good practice while balanced cables can easily extend 100 meters (300'). The balanced output of the J48 Stereo is mic level, meaning that it should be connected to the mic input of a mixing console or mic preamp. Once connected, make sure phantom power is activated. The green LED on the J48 Stereo will illuminate to let you know phantom power is present.



*J48 Stereo with an acoustic guitar and stage amp.*



*J48 Stereo with a keyboard, mixer and powered speaker.*

## USING THE -15dB PAD

Inside the J48 Stereo is a unique switching power supply that is designed to provide plenty of headroom even when pushed very hard. There are however, instances when the output from an instrument can be extreme. To prevent distortion, the J48 Stereo has a -15dB input pad that reduces the input sensitivity. Examples could be a very high output digital piano, active bass guitar or maybe the overly aggressive output from a DJ mixer. If you hear distortion, simply depress the PAD.



## USING THE GROUND LIFT

An active direct box is in essence a unity gain amplifier that requires power to work. In the early days, active direct boxes typically employed a battery for power. Today, phantom power from the console has become the most common power source.

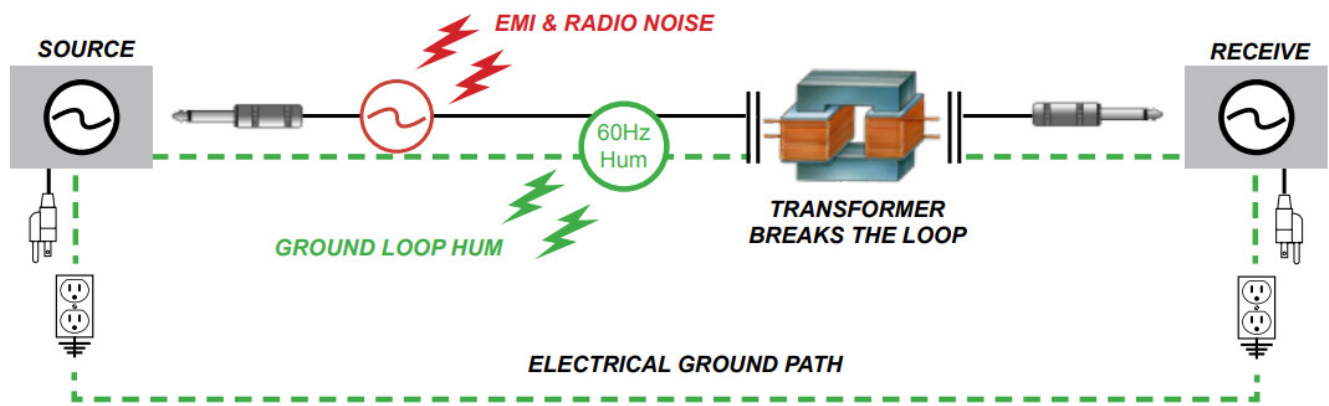
This 48 volt supply uses the pin-1 (ground) and pin-2 (hot) on the XLR cable to provide DC power to the direct box while audio is sent in the opposite direction over the same cable.



## GROUND LOOPS

A common problem occurs when connecting a stage amp to the direct box whereby a so called ground loop can present itself. This is often caused by DC offsets or voltage differentials that can introduce hum and buzz in the sound system. The first line of defense is to lift the audio ground – pin-1 on the XLR. With most direct boxes, when you lift the ground you also disconnect phantom power. This then requires using a battery or external supply to provide the power – options that are not desirable. With the J48's unique circuit design, instead of lifting the ground at the XLR, it is done in the power supply section of the circuit board. This eliminates the noise problem without losing power. If you hear noise, simply depress the ground lift switch.





The image above shows an audio source and a destination with a common electrical ground. As the audio also has a ground, these combine to create a ground loop. The transformer and ground lift work together to eliminate the ground loop and potential noise.

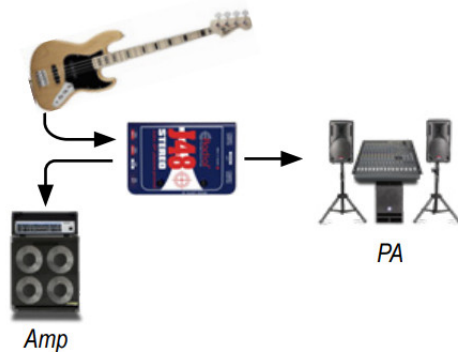
## USING VARIOUS INSTRUMENTS

The J48 Stereo is active. This means that it has a built-in preamp or buffer circuit that drives the signal. This is the benefit of an active direct box over a passive counterpart. In other words, if you have a passive source such as an old Fender bass, the J48 Stereo presents a very effective interface. Many sound engineers also prefer the added gain of an active direct box on active instruments such as with acoustic guitars and vintage keyboards that may not have the optimal output.

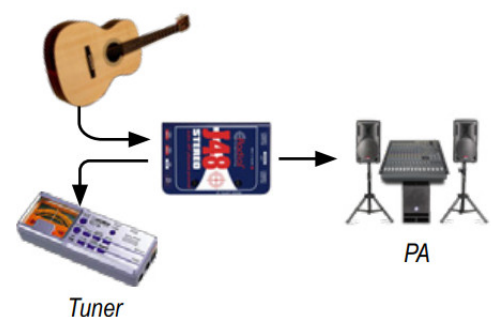
In some instances the J48 Stereo can also improve signal to noise.

## EXAMPLES OF INSTRUMENTS:

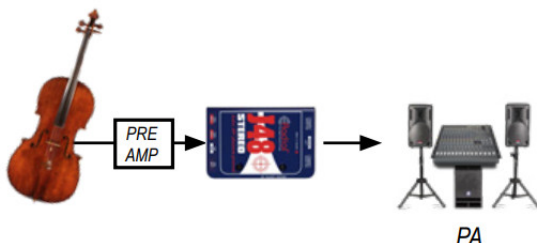
1. Fender bass to DI to amp and PA



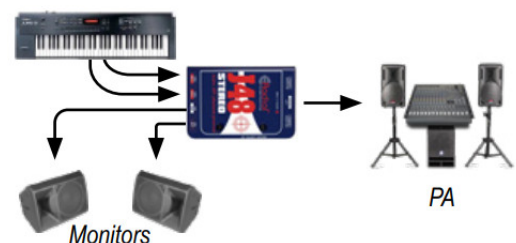
2. Acoustic guitar with active electronics to DI to PA



3. Upright bass to dedicated preamp to DI to PA



4. Stereo keyboard to DI to PA



## USING THE HIGH-PASS FILTER

A very handy feature that is built into the J48 Stereo is the high-pass filter. When activated, it gently rolls off low frequencies below 80Hz and helps eliminate resonance and feedback.

This feature is particularly effective at cleaning up the low registers, making it easier to mix.

The other benefit with eliminating bass is that you actually increase the available dynamics. Low frequencies and

their huge waves require more power than their high frequency counterparts. Reducing low frequency content in the music program results in more available headroom and less distortion.



### USING THE POLARITY REVERSE SWITCH

The RIGHT channel on the J48 Stereo is equipped with a polarity reverse switch that toggles pin-2 and pin-3 on the XLR. This handy feature can be used in several ways:

#### 1. Stereo Imaging

In some instances, particularly when recording – changing the relative phase between the left and right channels can produce very pleasing results. Similarly, when using two sources such as combining a magnetic pickup with a piezo on an acoustic guitar, changing the relative phase between them can sometimes produce a more natural sound.



*As this switch is recessed, use a small screwdriver to activate.*

#### 2. Eliminating Feedback

Resonant feedback on a live stage is often produced when sound sources such as the PA and stage amp combine to create a hot-spot at certain frequencies. This can cause an acoustic instrument to vibrate, resulting in low frequency feedback. This can often be minimized by reversing the polarity at the XLR, electronically moving the problem out of the way, without having to resort to excessive (tone altering) equalization.

#### 3. Adapting to non-AES standards

When interfacing with older vintage audio equipment, the polarity may be reversed whereby pin-3 may be hot. Depressing the polarity switch lets you match the phase if needed.

### OPTIONAL RACK MOUNTING KITS

The J-Rak 8 and J-Rak 4 are an innovative rack mount chassis. The J-Rak 8 has eight vertical slots for Radial J48 Stereo direct boxes or the other Radial J-Class products. The J-Rak 4 has four horizontal slots.

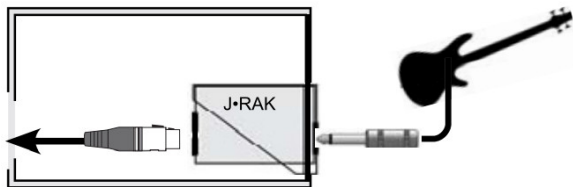


J-Rak 8

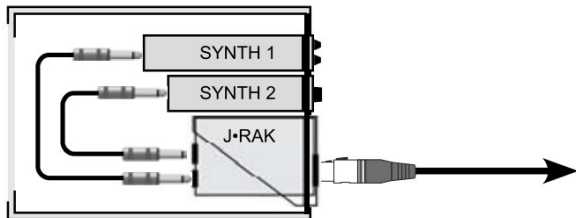


J-Rak 4

Each direct box can be front or rear mounted allowing the system designer to have the XLR's on the front of the rack or rear, depending on the application.



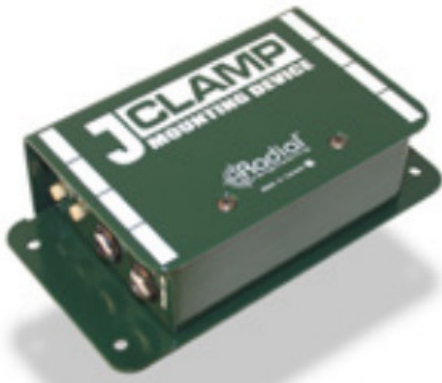
GUITARS AND BASS The 1/4" inputs face front allowing easy connection for instruments.



KEYBOARD RACKS The 1/4" inputs face toward the rear for connection to rackmounted modules.

### J-CLAMP

The J-Clamp is a mounting adapter that allows any of the Radial J-Class products to be permanently mounted in locations such as in podiums, under board room tables and inside amplifier and effect racks. Features a heavy-duty steel shell with built in mounting flange and user-writable tabs.



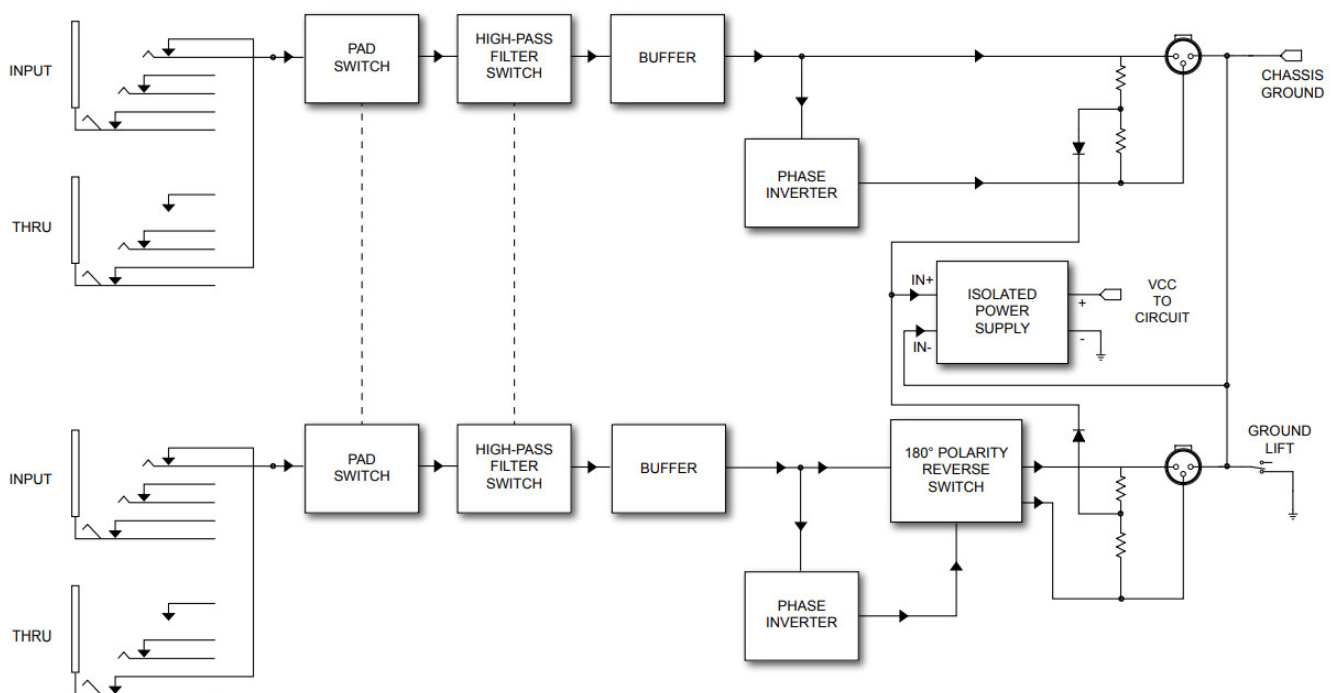
### SPECIFICATIONS

Audio circuit type:	Proprietary analog circuit with low-noise op-amp
Frequency response:	20Hz ~ 20KHz
Dynamic range:	109dB
Noise floor:	-99dB below 0dBu
Equivalent input noise:	-103dBu
Maximum input:	+10dBu
Phase deviation:	+10° at 20Hz   0° at 1kHz   -1° at 20kHz
Total harmonic distortion:	0.002% @ -5dBu
Inter-modulation distortion:	0.003% @ -3dBu
Input impedance:	220kΩ – 1/4" input



Output impedance: .....600Ω – XLR output  
 Input pad:..... -15dB  
 Polarity:.....180° signal polarity reverse – right channel only  
 Low-cut filter: .....-3 dB @ 80Hz  
 XLR configuration: ..... AES standard (pin-2 hot)  
 Power: ..... 48V phantom – internal switching supply  
 Construction: .....14 gauge steel chassis and outer shell  
 Finish: .....Powder coat  
 Size:..... 3.3" x 5.0" x 2" (84 x 127 x 48mm)  
 Weight: ..... 1.55 lb (720 g)  
 FCC approval: ..... Complies with section 15 of the FCC Rules  
 Conditions:..... For use in dry locations only between 5°C and 40°C  
 Warranty: ..... Radial 3-year, transferable

## BLOCK DIAGRAM



## RADIAL ENGINEERING 3 YEAR TRANSFERABLE WARRANTY

RADIAL ENGINEERING LTD. ("Radial") warrants this product to be free from defects in material and workmanship and will remedy any such defects free of charge according to the terms of this warranty. Radial will repair or replace (at its option) any defective component(s) of this product (excluding finish and wear and tear on components under normal use) for a period of three (3) years from the original date of purchase. In the event that a particular product is no longer available, Radial reserves the right to replace the product with a similar product of equal or greater value. In the unlikely event that a defect is uncovered, please call 604-942-1001 or email [service@radialeng.com](mailto:service@radialeng.com) to obtain a RA number (Return Authorization number) before the 3 year warranty period expires. The product must be returned prepaid in the original shipping container (or equivalent) to Radial or to an authorized Radial repair center and you must assume the risk of loss or damage. A copy of the original invoice showing date of purchase and the dealer name must accompany any request for work to be performed under this limited and transferable warranty. This warranty shall not apply if the product has been damaged due to abuse, misuse, misapplication, accident or as a result of service or modification by any other than an authorized Radial repair center.

THERE ARE NO EXPRESSED WARRANTIES OTHER THAN THOSE ON THE FACE HEREOF AND DESCRIBED ABOVE. NO WARRANTIES WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT

LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL EXTEND BEYOND THE RESPECTIVE WARRANTY PERIOD DESCRIBED ABOVE OF THREE YEARS. RADIAL SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSS ARISING FROM THE USE OF THIS PRODUCT. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH MAY VARY DEPENDING ON WHERE YOU LIVE AND WHERE THE PRODUCT WAS PURCHASED.

To meet the requirements of California Proposition 65, it is our responsibility to inform you of the following:

**WARNING:** This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Please take proper care when handling and consult local government regulations before discarding.

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Appearance and specifications subject to change without notice.

This device complies with section 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



### Documents / Resources

	<p><a href="#">Radial engineering J48 1-channel Active 48v Direct Box</a> [pdf] User Guide J48, 1-channel Active 48v Direct Box, Active 48v Direct Box, 48v Direct Box, J48, Direct Box</p>
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