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JDI STEREO

Jensen Transformer Equipped

JDI STEREO USER GUIDE
JENSEN TRANSFORMER EQUIPPED
PASSIVE DIRECT BOX

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RADIAL JDI STEREO PASSIVE DIRECT BOX USER GUIDE

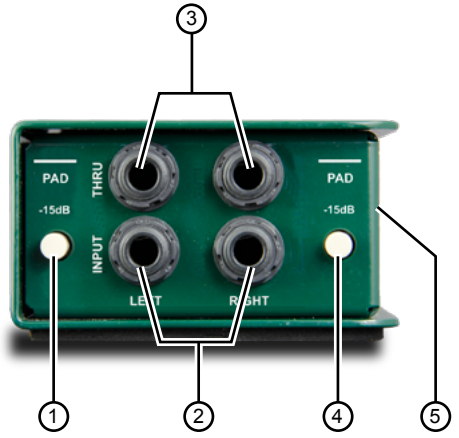
Thank you for purchasing the Radial JDI Stereo. This marvelous passive direct box employs two great sounding Jensen transformers to convert the impedance and balance the signal. Jensen transformers are legendary in their ability to transfer the minute details of your most cherished instrument and gracefully handle transients without choking. This makes the JDI Stereo a very effective D.I. box for all types of instruments.

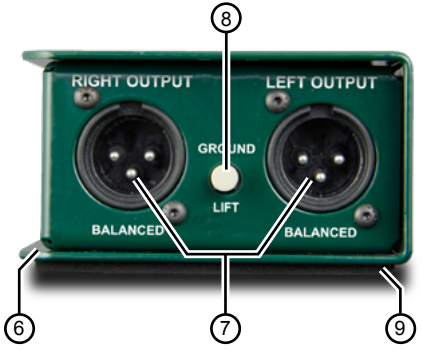
The JDI Stereo is in fact a very easy to use direct box that is purposely made to be compact and quick to deploy. You simply plug in and it works. No power required. There are however some great features that are built in that should be understood in order to get the most out of your JDI. So please take 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 on 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 and we will do our very best to reply in short order.

Now get ready to enjoy what can only be called the best sounding passive direct box ever made!

FEATURES

1. -15dB PAD: Reduces the input sensitivity of the left channel to prevent overload.
2. ¼" INPUTS: Left and right unbalanced, hi-Z inputs used to connect instruments.
3. ¼" THRU-PUTS: Left and right parallel outputs used to connect the hi-Z instrument signal to an amplifier, tuner or personal monitoring system.
4. -15dB PAD: Reduces the input sensitivity of the right channel to prevent overload.
5. I-BEAM REINFORCED: 14-gauge steel enclosure with rigid I-beam construction makes it impossible to torque the PC board and cause solder joints to go cold.
6. BOOKEND DESIGN: The bookend design creates a protective zone around the switches and connectors.
7. XLR OUTPUTS: Left and right balanced, low-Z mic-level output. Wired to AES standard pin-1 ground, pin-2 hot (+) and pin-3 cold (-).
8. GROUND LIFT: Disconnects pin-1 at both XLR outputs to reduce hum and buzz caused by ground loops.
9. FULL BOTTOM PAD: Isolates the D.I. from the amp chassis and keeps it from sliding around on busy stages.





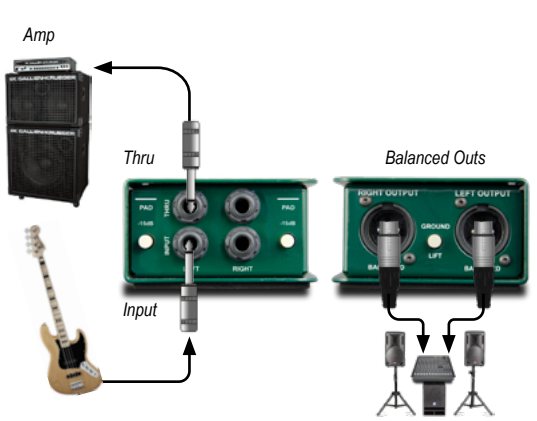
OVERVIEW

The Radial JDI is a passive direct box. This means that it does not require any power to make it work. You simply plug in and it will quietly go to work. Further, as the JDI Stereo employs transformers, these naturally block stray DC voltage that can cause system noise. This also means that 48V phantom power as used with condenser microphones will not harm the JDI Stereo.

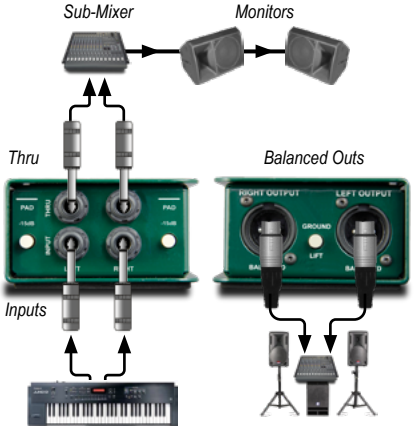
MAKING CONNECTIONS

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 JDI Stereo. These are identical and feature a ¼" INPUT, a ¼" 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 provides the means for connecting the instrument 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 JDI Stereo is mic level, meaning that it should be connected to the mic input of a mixing console or mic preamp.



Using the JDI Stereo with a bass and stage amp



JDI Stereo with a keyboard, mixer and powered speaker

USING THE -15dB PAD

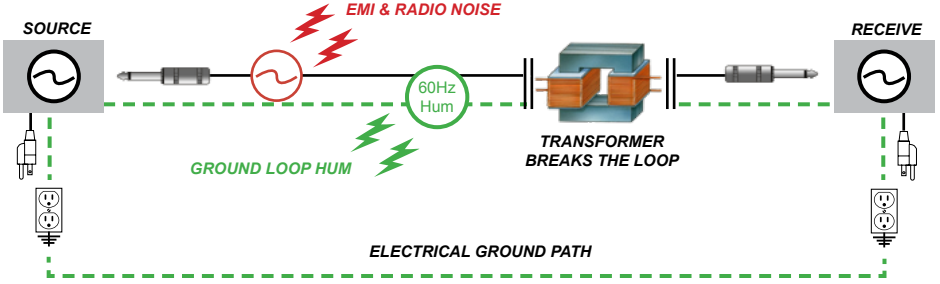
Inside the JDI Stereo are two high performance Jensen transformers. These can be hit hard with plenty of level without worry. In fact, many artists and engineers enjoy the sound of the JDI when pushed hard as it will exhibit a natural compression when the transformer is pushed towards saturation.

There are however instances when the output from an instrument can be extreme. To prevent from excessive saturation, the JDI Stereo has a -15dB input pad that reduces the input sensitivity. Examples could be a very high output digital piano or maybe the overly aggressive output from a DJ mixer.

USING THE GROUND LIFT

Passive direct boxes like the JDI Stereo are particularly effective at reducing hum and buzz by so called ground loops. But ground loops manifest themselves in many different ways including induced DC noise into the cable from nearby power supplies or transformers, DC offset currents from less than ideal electronic designs, or simply a bad electrical supply that is causing havoc. The Jensen transformers will block DC current while passing audio.

To further assist, the JDI Stereo is equipped with a ground lift switch that lifts pin-1 on both XLR connectors at the same time. When the electrical ground and the audio ground conflict, you can encounter noise and simply lifting the audio ground will usually solve the problem.



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.

PASSIVE VS. ACTIVE

As a direct box, the JDI Stereo will work with almost any instrument. It is however important to understand a few fundamentals. The JDI Stereo is passive. This means that it does not require any power to make it work. This also means that it employs the signal from the source instrument as the 'drive' which produces the balanced signal for the PA system or recorder. This also means that if the input signal is very low, there may not be a strong enough signal to effectively drive the JDI. This is why passive direct boxes are usually recommended with active sources and active direct boxes like the Radial J48 are recommended for passive sources.

Examples of relatively low output passive sources include an old Fender bass, piezo pickups and some sound hole acoustic guitar pickups. Examples of higher output active sources include basses and acoustic guitars with built-in electronics (and a battery), electronic keyboards and DJ mixers. Active sources are 'powered' and are able to produce a more powerful signal than passive sources.

THE VARIOUS INPUT IMPEDANCE

Radial makes a number of direct boxes to handle just about any situation. These differ by being active or passive and will have a different input impedance depending on the desired use. As a rule: the higher the input impedance the 'brighter or glassier' the tone. The lower the input impedance; the 'warmer and smoother' the tone.

Model	Input impedance	Application
JDI	130,000Ω (130kΩ)	Active/passive bass, acoustic guitar, keyboard, DJ mixer
J48	220,000Ω (220kΩ)	Passive bass, acoustic guitar
PZ-DI	10,000,000Ω (10MΩ)	Piezo transducer

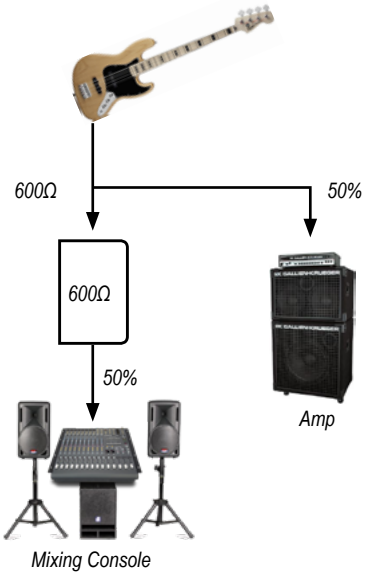
You will note that some of this information is conflicting. This has to do with personal preference. For instance, sound engineers tend to prefer to use an active direct box like the J48 with an acoustic guitar as it tends to give the sound more sparkle. Some bass players prefer the sound of their old P-Bass through a passive direct box like the JDI as it sounds warm and smooth. So these are merely guidelines.

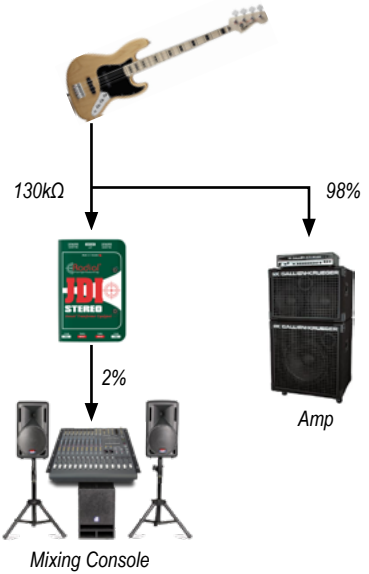
With piezo transducers, the rules change as these devices tend to sound much warmer and less peaky when presented with a very high input impedance. The Radial PZ-DI has a load switch that lets you select between 220kΩ like the J48 for magnetic pickups 1MΩ to follow the original impedance as set by Leo Fender and a 10MΩ input for piezos.

UNDERSTANDING LOADING

A problem that was detected early on was the sound or effect that a transformer can impose on an instrument. Back in the early days of direct boxes, 600Ω broadcast or telephone transformers were used. These had such a low impedance that almost half of the signal from the instrument would be sent to the mixing desk, leaving very little left for the musician's amp on stage. Passive basses would sound listless and have no punch. Active D.I. boxes solved the problem by increasing the input impedance and buffering (amplifying) the signal to drive it.

The JDI's input impedance is 130,000Ω – quite different from the old 600Ω days. This means that the JDI will not load down the pickup, which in turn means that the THRU output going to the stage amp will sound just fine.





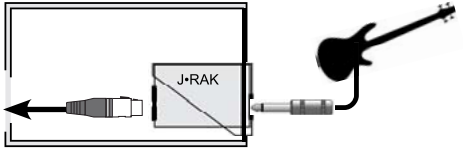
OPTIONAL RACK MOUNTING KITS

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

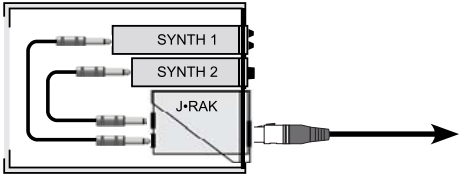
J-Rak 8

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.



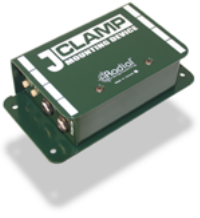
GUITARS AND BASS The 1/4" inputs face front allowing easy connection for instruments.



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

J-CLAMP

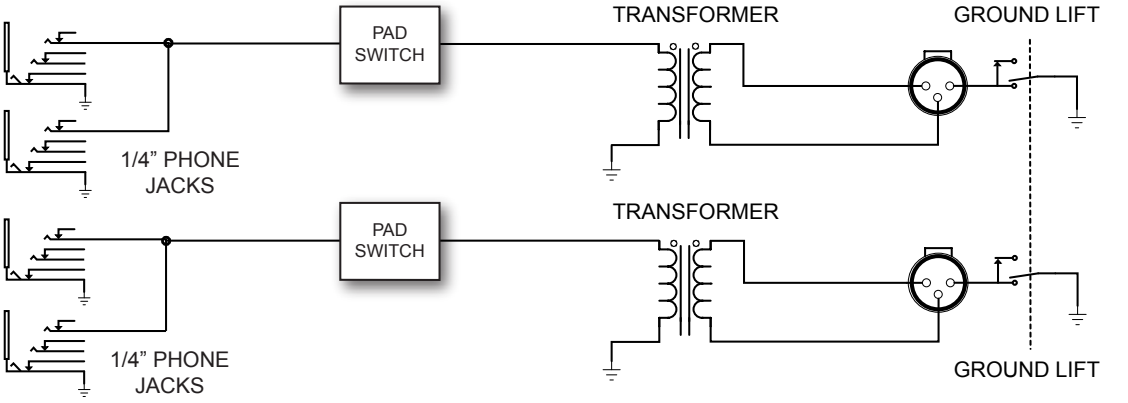
The J-Clamp is a mounting adapter that allows any of the Radial J-Class products to be permanently mounted in locations such as in podiums, under board room tables and inside amplifler and effect racks. Features a heavy-duty steel shell with built in mounting flange and user-writable tabs.



SPECIFICATIONS

Audio circuit type:	Passive, transformer isolated
Frequency response:	20Hz ~ 20KHz (±3db)
Dynamic range:	135dB
Maximum input:	+21dB @ 20Hz ~ 20kHz
Phase deviation:	0.3° @ 100Hz; 3° @ 20Hz
Input impedance:	130kΩ, unbalanced
Output impedance:	150Ω, balanced
Transformer:	Jensen JT-DB-E, 12:1 ratio
Shield:	Dual Faraday, mu-metal can
Input pad:	-15dB
XLR configuration:	AES standard (pin-2 hot)
Construction:	14 gauge steel chassis & outer shell
Finish:	Durable powder coat
Size (LxWxD):	5" x 3.3" x 1.8" (127mm x 84.1mm x 45.5mm)
Weight:	1.55 lbs (703 grams)
Shipping size (LxWxD):	6.5" x 4" x 3" (165mm x 102mm x 76mm)
Shipping Weight:	1.92 lbs (870.9 grams)
Power:	Passive, no power required
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 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.

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