

# Radial JD6

## Six Channel Rack Mount D.I.



## User Guide

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Congratulations on your purchase of the Radial JD6 multi-channel direct box. The JD6 is a world-class 19" rack-mountable DI system that has been optimized for use with keyboards, guitars, and instruments of all types.

As there are many innovative features in the JD6, we recommend that you take a few minutes to read through this manual in order to familiarize yourself with the design and features that are built in. Most importantly, the Radial JD6 features internal grounding options that will be of particular interest to engineers when integrating the JD6 with keyboard racks.

Should you have a question or application in mind that is not covered in this manual, we invite you visit [www.radialeng.com](http://www.radialeng.com) to check the FAQ section for the latest updates.

## INTRODUCTION

The Radial JD6 is a 6-channel rackmount version of the highly successful Radial JDI direct box. Upon inspection you will notice that channels 1 and 2 differ from channels 3 through 6. A ‘Swiss Army knife’ approach is introduced to allow the 1st two channels on the JD6 to be problem solvers for stage and studio. Added features include a high frequency filter to reduce noise, and a merge function to mix left & right keyboard outputs to mono. The other 4 channels address basic DI requirements as normally required for keyboards, electronic drums and other audio sources.

As with all Radial direct boxes, the audio signal path is of utmost importance. The Radial JD6 is a passive direct box and employs the finest Jensen™ audio transformers for absolute best performance. Each channel of the JD6 has been provided with internal grounding switches to allow the system engineer to select between floating and chassis grounding for maximum flexibility.

Key features on the JD6 include switching jacks for channels 1 and 2 whereby the front jacks take priority over the rear panel jacks. This is of particular importance in studio set-ups where the JD6 can act as a patch bay to quickly reconfigure the signal path.

Like all Radial products, the JD6 is designed to handle the harshest touring environments. Welded 14 gauge steel construction, baked enamel finish, high-cycle rate switches and glass-filled high-impact polymer connectors with nickel silver contacts combine for maximum durability. The Radial JD6 is supported with a 3-year limited warranty.

## FRONT PANEL FEATURES



1. **-15dB Pad:** All channels on the Radial JD6 feature a -15dB pad to reduce the level coming from high output sources.
2. **8kHz filter:** Channels 1 & 2 feature a gentle low-pass filter that rolls off highs at 8kHz. This is designed to remove hiss from noisy source devices. To engage the filter, the pad must also be depressed.
3. **180° polarity reverse:** The 180° polarity reverse is used to reverse the polarity (sometimes called absolute phase reverse) at the XLR by flipping pin-2 and pin-3. This is used when interfacing with older equipment that was made before the AES pin-2 standard was adopted. It can also be used in a creative way when combining direct and mic'd sources.
4. **Ground lift:** The ground lift switch is used to disconnect pin-1 at the XLR output to help eliminate hum and buzz caused by ground loops. Lifting the XLR ground connection presumes you intend to ground the JD6 at the input.

***NOTE: Inside the JD6 are individual chassis ground lift switches. These are factory set to float thus providing isolation between adjacent channels and provide 100% floating circuits as if using 6 separate direct boxes. This is detailed further in the manual.***

5. **Input connector:** For maximum flexibility, the Radial JD6 features both front and rear ¼" input and thru-put connectors on channels 1 and 2. feature 'priority switching jacks' on the front panel. This means that when the channels are normally connected using the rear panel jacks, the front panel jacks will divert the input giving these priority, thus temporarily disconnecting the rear jacks until such time as the front panel input jacks are removed. This is of particular advantage in a studio where the JD6 may be 'wired' to a patch bay for the keyboards. To patch in a bass, one would simply plug into the channel-1 front panel ¼" jack and start recording.
6. **Thru-put connector:** As with all direct boxes, the JD6 is outfitted with a thru connector on each channel. This is used to pass the direct signal directly thru to the instrument amplifier. On channels 1 & 2, these are duplicated on the front and the rear of the unit and feature switching jacks with front panel priority. Normally, the thru will be connected on the rear panel. By inserting a jack into the front panel THRU connector, the signal will be diverted to the front jack and disconnect the rear connection.
7. **Merge function:** Channels 1 & 2 also feature a function called Merge. When this switch is depressed, it turns the Input and Thru-put connections into a 'left and right' mix to mono at the XLR output. This passive (resistor) mix or summing function is a real helper when there are insufficient snake or mixer channels to handle over-abundant channel feeds in some keyboard set-ups. Depressing the merge switch affects both the front and rear jacks.

## REAR PANEL CONNECTIONS

Upon first inspection, the rear panel connections appear to be identical for all channels. Although true, it should be noted that channels 1 and 2 employ switching jacks with front panel priority. This means that these channels will work exactly the same as the others unless the front panel jacks are employed. This would of course divert the input from the rear to the front as the front input jacks have been given priority.



All channels feature an input connector that is connected to the source and a thru connector that is normally connected to the keyboard player’s personal mixer. The XLR output employs the AES standard with pin-1 ground and pin-2 hot. This is isolated using a Jensen JT-DBE transformer and is connected to the mixer. The XLR output provides a transformer isolated mic-level signal that can drive cables up to 300 feet (100 meters) without introducing noise.

It is important to note that the output of the JD6 be microphone level so that it can run along side mic signals without introducing crosstalk or distortion when passing through typical mic splitters. As such, the output of the JD6 must be connected to the mic input on a mixer or to a microphone preamplifier in order to properly match your levels and impedance. Doing so will provide optimum sound quality and the best overall performance.

## USING THE JD6

Before connecting the JD6 to your system, ensure all levels are turned off so that you do not cause connection pops in your system. All switches should be in the OUT position when setting up the system. The JD6 is completely passive and therefore requires no power. Just plug and play. Having 48V phantom on to power condenser microphones or active direct boxes will not harm the JD6.

On each channel, connect the source instrument to the input, your instrument amplifier or personal mixer to the thru-put and the XLR output to the main house or recording mixer. If noise is encountered, try lifting the ground. If the level seems high on a particular channel, engage the -15dB pad.

When recording a direct feed from your instrument as well as a the feed from a microphone placed on an amplifier, try reversing the polarity. Should you need to sum a stereo source down to mono, connect the left and right outputs of your device to the input and thru connectors of channel 1 or 2 and press the merge switch.

## GROUNDING OPTIONS FOR THE SYSTEM ENGINEER

For pro-touring, the Radial JD6 is outfitted with some helpful grounding schemes. This allows the system integrator, studio designer or keyboard technician to use several options to best adapt to their designs for safe and noise-free performance.

As noted earlier, all JD6 channels feature a separate XLR pin-1 ground lift for each channel. It is important to note that each channel of the JD6 is also 100% isolated from each other to eliminate crosstalk and potential ground problems. This is why all of the input jacks are isolated.

Inside the JD6 are six additional ground switches (fig. 1) that allow the system engineer to bond the circuit ground to the chassis. Normally, each channel of the JD6 is ‘floating’ whereby each channel acts as if it were a separate or a stand-alone direct box. Some system engineers prefer to set-up alternate ground schemes such as ‘star grounds’ whereby a single ground point is employed and all channel grounds are directed to this point. These switches are factory set in the floating position but may be changed by simply opening up the JD6 and depressing the chassis ground switch. A ground lug on the rear panel (fig. 2) would then be used to bond the JD6 chassis to the rack or a ground bus.

As an added feature, channel-1 employs a side access ground switch (fig. 3) for system engineers that employs a single audio channel for chassis ground. This is activated using a small screwdriver.

**NOTE: Chassis grounding is usually not required with the Radial JD6 because of the isolating nature of the device and the extensive ground plane that is employed. Unless you are a qualified system engineer, we recommend that these be left in the factory set position. As such, changing these has purposely been made difficult.**

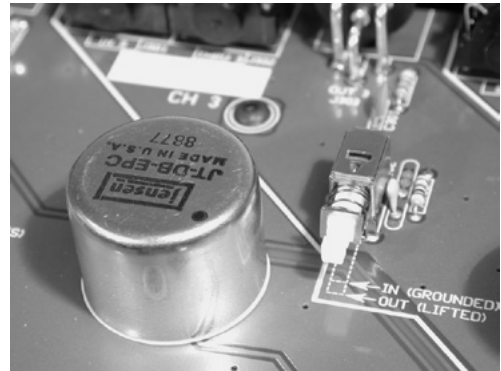


Fig. 1 Internal ground switch on each channel is factory set to ‘float’



Fig. 2 A convenient chassis ground is provided to allow alternate ground schemes

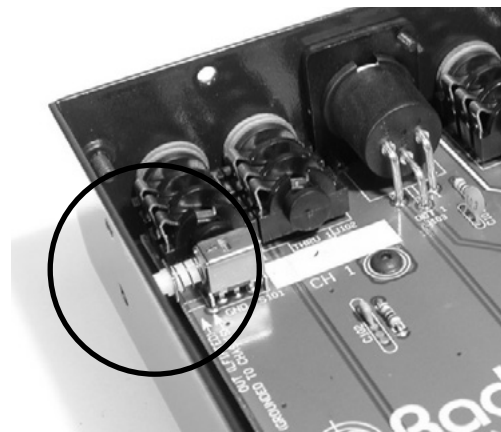
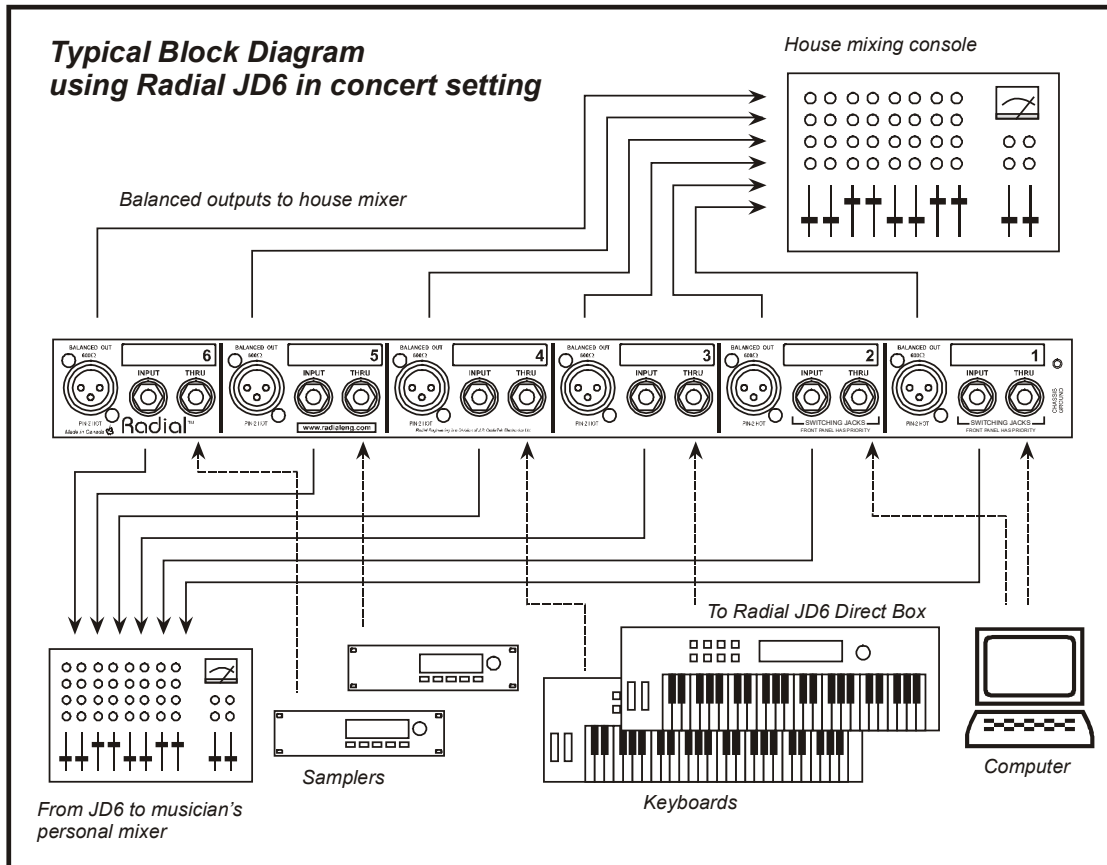


Fig. 3 Channel 1 side access switch connects chassis ground to pin-1. Factory set ‘out’ to ‘float’

**TYPICAL STAGE SET-UP USING THE RADIAL JD6**

The Radial JD6 may be used in a variety of configurations. This common set-up for stage use shows a computer with an audio interface connected to channels 1 & 2, keyboards to channels 3 & 4 and sound modules to channels 5 & 6.



## SPECIFICATIONS

Audio circuit type:	Passive, transformer based
Number of channels:	Six channels
Frequency response:	20Hz ~ 20KHz ( $\pm$ 0.2dB)
Dynamic range:	135dB
Maximum input:	+21dB @ 20Hz
Total harmonic distortion:	0.05% from 20Hz ~ 20kHz @ -10dB
Phase deviation:	0.3° @ 100Hz; 3° @ 20Hz
Input impedance:	140k Ohms, unbalanced
Output impedance:	150 Ohms, balanced
Transformer:	Jensen JT-DBE, 12:1 ratio
Shield:	Mu-metal can with internal Faraday shield
Input pad:	-15dB
Merge:	Sums left & right sources to mono (ch. 1 & 2 only)
180° polarity reverse:	Inverts absolute phase
Ground lift:	Disconnects pin-1 at XLR output
XLR configuration:	AES standard (pin-2 hot)
Connectors (Channels 1-6):	1/4" in & thru, XLR-M out
Construction:	14 gauge steel chassis & outer shell
Finish:	Durable powder coat
Size (W x H x D):	483 x 44.5 x 159mm (19" x 1.75" x 6.25")
Weight:	3.6 kg (8 lbs.)
Shipping Size (W x H x D):	260 x 114 x 568mm (10.25" x 4.50" x 22.37")
Shipping Weight:	3.7 kg (8.15 lbs)
Power:	Passive, no power required
Conditions:	For use in dry locations only between 5°C and 40°C
Warranty:	Radial 3-year, transferable

*Specifications are subject to change without notice.*



### THREE YEAR TRANSFERABLE LIMITED 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.

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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