

Twin-Iso™



User Guide

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WELCOME

Congratulations on your purchase of the Radial Twin-Iso stereo (dual mono) line-level isolator. The Twin-Iso is a handy device that will allow you to isolate audio equipment and eliminate troublesome noise caused by ground loops.

The Radial Twin-Iso employs two high-performance Jensen isolation transformers to ensure the best signal transfer is enjoyed without artifacts or distortion. This makes the Twin-Iso a perfect choice where multiple consoles need to be sub-mixed, when isolating amplifier distribution racks and for connecting remote speaker towers. The Twin-Iso can also eliminate ground loop problems where equipment must be connected to alternate power sources such as generators.

As with all Radial products, the Twin-Iso is made with 14 gauge steel and features an internal welded I-beam frame for maximum rigidity. Switches and jacks are protected by our unique bookend construction, making the Twin-Iso virtually impossible to damage even in the most abusive touring environments.

We have purposely written this manual to be short, as most users will likely be familiar with the Twin-Iso's applications. We do suggest that you take a moment to read through this document to familiarize yourself with the features that have been built in. For more detailed information, please visit the Radial website. This is where we post questions and answers that come from users after the product is released. If you do not find an answer, we invite you to send us an email at info@radialeng.com and we will do our best to answer your query in a prompt and professional manner.

The Radial Twin-Iso is a wonderful device that will surely provide you with years of problem-solving connectivity. Enjoy!

INTRODUCTION

The Radial Twin-Iso has been designed to provide electrical isolation between two line-level devices such as between two mixing consoles, remote speakers, crossovers and amplifier racks. Use the Twin-Iso anywhere source and destination devices may cause system noise because of different ground potentials (often referred to as ground loops).

So-called ground loops are caused by differing voltage references from various pieces of equipment that, when connected together, can introduce a 60 cycle hum in the sound system. Although there are various solutions that can be engineered to eliminate noise, the simplest and most effective is to isolate the source and destination with an audio transformer.

The Radial Twin-Iso employs two high-quality Jensen transformers to do the task. Jensen is renowned for their quality and the ability of their transformers to handle high signal levels without saturation and transfer the signal without introducing phase distortion or group delay. Although the cost is higher, a good quality transformer will assure the signal remains true to the source, resulting in better sound.

When you first pick up the Radial Twin-Iso, you will immediately notice the weight. This 'hefty' device employs a welded steel I-beam internal construction to assure the internal PCB will not torque, preventing part failure. Besides the heavy-duty enclosure, the extra-large transformers add to the Twin-Iso's

robustness. As a rule, the larger the transformer, the more signal handling capacity it will have and Jensen transformers can drive loads of 600 ohms up to +21dBu at 20Hz.

The Radial Twin-Iso is equipped with two XLR inputs and two XLR outputs. Each channel is 100% isolated from the other to eliminate cross-talk or interaction, thus allowing two completely different audio sources to use the Twin-Iso at the same time. Although the Twin-Iso is designed for +4dB professional line-level signals, the transformers will actually handle over 20dB without choking.

Each of the Twin-Iso's outputs feature a 180° polarity reverse switch to ensure both consoles are 'in phase' and pushing the speakers in the same direction. This allows the Twin-Iso to feed a sub-group or auxiliary input of a console where polarity reversals are generally not provided. Finally, the Twin-Iso is equipped with a ground lift switch to further reduce system noise should it be present.

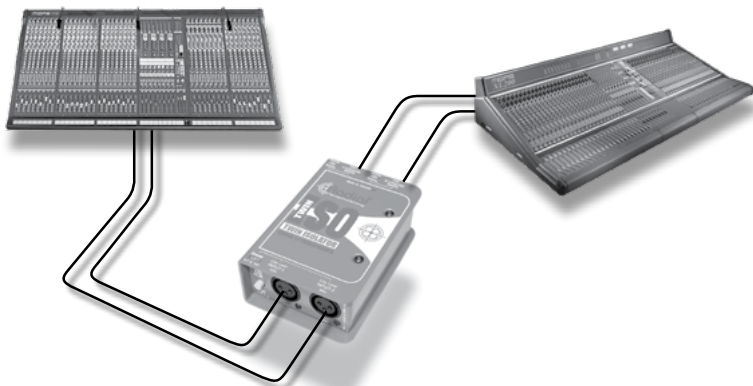
USING THE TWIN-ISO

As with all Radial products, using the Twin-Iso is simple and straight forward. Make sure the sound system is turned off and all levels are set to zero before making audio connections. This will avoid any pops in the sound system that could cause damage to speakers.

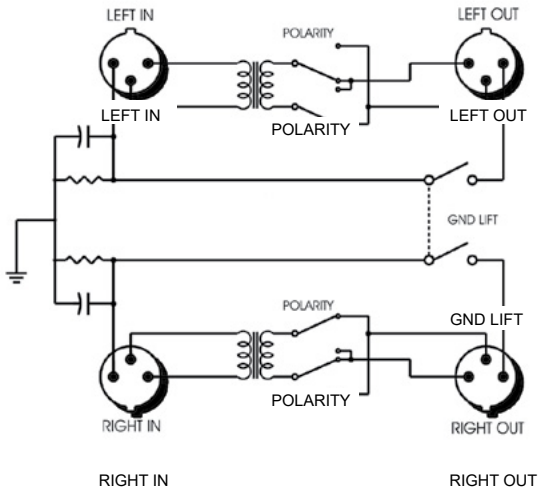
The Twin-Iso is completely passive and does not require a power supply of any kind. Connect the source device to the Twin-Iso inputs. Connect the Twin-Iso outputs to the destination device. Turn the system up slowly and listen for noise. In the unlikely event you should encounter noise, simply depress the ground lift switch. That's all there is to it.

AUX CONSOLE master outputs connect to Twin-Iso inputs.

MAIN CONSOLE Twin-Iso outputs feed main console.



TWIN-ISO BLOCK DIAGRAM



J-RAK

The optional J-RAK™ is a high density rackshelf for Radial DI's and splitters. It's a 2RU rack chassis that allows up to 8 Radial devices in one neat high density 19" package. The DI's can be mounted with either the input side or output side facing the front. Ideal for studio or touring. Constructed of 14 gauge steel with a baked enamel finish.



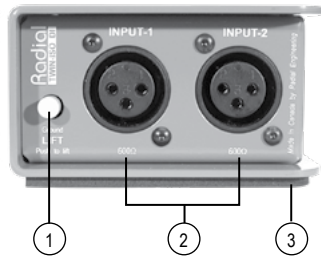
J-CLAMP

The optional J-CLAMP™ can mount a single Radial device to virtually any surface. Perfect for hiding away inside racks, on podiums or under tables. Constructed of 14-gauge steel with a baked enamel finish.



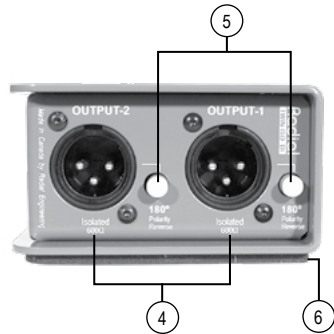
INPUT PANEL

1. **Ground lift (inputs)** Lifts the ground pin-1 on both XLR input connectors.
2. **Input-1 & 2** For low impedance, balanced line-level signals.
3. **Bookend design** 14 gauge steel outer shell creates protective zone around connectors and switches.



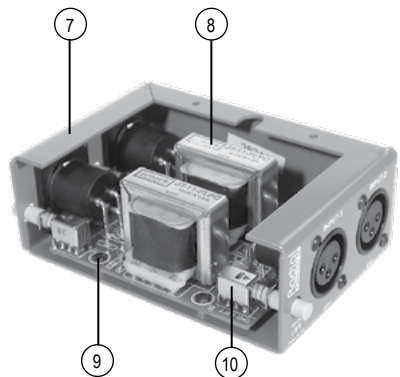
OUTPUT PANEL

4. **Output-1 & 2** line-level transformer-isolated outputs.
5. **Polarity reverse** 180°-Polarity reverse switch for outputs-1 & 2.
6. **Full-bottom no-slip pad** This provides electrical isolation and plenty of "stay-put" friction to keep the Twin-Iso in one place.



CONSTRUCTION

7. **Ultra rigid steel I-beam** enclosure eliminates stress that could torque the PC board and cause solder joint failure.
8. **Jensen transformers** offer outstanding audio performance.
9. **Military-grade double-sided PCB** with plated through-holes is bolted to welded steel standoffs.
10. **Sturdy high-cycle PCB** mounted switches are rated for long life.



TWIN-ISO SPECIFICATIONS	
Frequency response	10Hz to 50kHz +/- 1dB
Max output level	+21dBu (20Hz, 1% THD)
Phase distortion	0.3° at 20Hz
Total harmonic distortion	0.001% THD @1k, +4dBu (0.035% at 20Hz)
Common-mode rejection	94dB @ 60Hz (83dB @ 3kHz)
Inputs	Balanced, line-level, pin-2 hot
Outputs	Balanced, line-level, pin-2 hot
Power requirement	None, completely passive
Size	3.25" x 5" x 1.875"
Weight	2 lbs.

**RADIAL LIMITED THREE 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. To make a request or claim under this limited warranty, 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 limited 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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