

EQ LIVE

THE RADIAL JDI

DIRECT BOX ON STAGE

Product Review - June 1996 edition

CONNECTIONS TO DI FOR

Anyone who has tried to plug an electric guitar directly into a mixer knows that this is not a musical combination. The high output impedance of the guitar pick-ups (greater than 100,000 ohms) are loaded down by the low impedance of the microphone input (less than 2000 ohms), causing loss of treble and sometimes even distortion. If you made this connection through a long cable, there was probably noise too. This was the reason the direct box was developed. 'DI', as most readers know, stands for direct injection or direct input or direct insertion, and means to take the sound from an electric instrument without using a microphone. Unfortunately, it is not just guitars that have this problem.

The output from many synthesizers, samplers, electric pianos, electronic drums and so on is often high-impedance. This is because the manufacturer's cost of adding a professional output connection is high and because such connections make these instruments easy to connect to common instrument amplifiers.

The DI box converts an instrument's unbalanced, high-impedance signal to a low-impedance balanced audio signal that is electrically similar to a microphone (150 ohms). This is achieved by using a transformer or active electronics to create a new output signal more suitable to use with professional audio equipment. The change in impedance is necessary to ensure the sound of the instrument reaches the mixer unscathed. High impedance signal lines can only run 15 to 30 feet before there is noticeable loss of high-frequencies. Plus, they are also very susceptible to the electrical noise prevalent in the modern world that is just waiting to jump in and solo with the band.

The DI box also provides a connection directly from the output connector (except on a few models) to a loop connection. This loop connection is used to plug in the instrument back into the musician's stage amp. Once this connection is made, the DI box becomes an invisible way of tapping into the instrument's sound without changing the stage setup of the musician. When connecting back to the stage amp, it is often necessary to disconnect the ground to the mixing console using a Ground-Lift switch on the DI box. This need is usually apparent when the instrument buzzes as soon as the connection to the mixer is made. If you are connecting an instrument through a DI box without any on-stage amp, you should ensure that the Ground-Lift switch is switched to ground. This will reduce the noise from the guitar cable and improve the electrical safety of the performer. Now the review:

JDI DIRECT BOX

If you want to connect two devices together with a minimum of fuss, then a passive circuit is ideal: no batteries; no additional noise; no problem. The DI box is intended to make life simple when it comes to connecting instruments to mixers for recording or sound reinforcement. There are a wide variety of devices built for this task, and as many of them impart a particular sound quality, they have become a matter of taste within the industry.

The two most basic criteria are: Does it sound good and does it solve problems? If the DI can make the appropriate impedance changes (>100,000 ohms to >200 ohms), handle the output level of any instrument you encounter, and make that instrument sound as good as it can, then the first criterion is met. The second one may be more difficult. One day the keyboard is quiet and trouble free, but the next day it is buzzing no matter which

way you throw the ground switch on the DI! A DI box that doesn't do this to you meets the second criterion.

The JDI JT-DBE Direct Box is built as solidly as any DI box I've seen and reflects a no-compromise approach throughout. Switches for the 15dB pad and pickup/Line are recessed yet easy to operate. The pad allows connection of line-level electronic instruments without overloading the transformer or the mixer microphone input. The pickup mode adds an RF filter into the output signal to reduce noise induced into instrument cables that are well above the audio-spectrum (>70kHz).

Conveniently, the 1/4-inch phone jack instrument connections and signal switching are on one end of the unit while the XLR output connector and ground-lift switch are on the other end. This makes the units easy to place on-stage with the side facing the performer available for their connection and leaving the connection to the mixer out of sight on the back. The steel case is made from square channel and the ends form the section that slides inside with all the switches and connectors attached. A very heavy coat of green paint gives the unit a distinctive finish that includes clear labeling of all switches and connections. A foam pad is glued to the underside to reduce the chance of slipping off the top of the amp even when the player is really rockin'.

The frequency response and phase response of the Radial JDI is excellent (see fig.1) and the sound of the unit can only be described as completely transparent. This is an excellent passive DI box that will keep working even after the band's van drives over it.

Manufacturer: Cabletek Electronics Ltd.
Applications: Connection to any unbalanced audio signal to a microphone input of a mixer
Summary: A superb DI box with an excellent transformer in a practical and rugged case
Strengths: Very high-quality Jensen Transformer, recessed switches and connectors; heavy duty case.
Weakness: It's green; no provision for loudspeaker level input

