

The JUNCTION PDI-09

Specialized Guitar DI-Box Manual



BACKGROUND

Traditionally, musical instruments are recorded using microphones. A microphone converts acoustic signals into electric signals, which in turn can be stored. Electric instruments do not need such a conversion since they already deliver an electric signal, and Direct Boxes (better known as DI-boxes) are used. A basic DI-Box merely adjusts the electric signal coming out of an instrument, so that it is compatible to that of a microphone.

The greatest advantage of microphones is that they also pick up the acoustics of a room. Should the acoustics of a room be good and suitable, you're usually better off using good microphones to record the signal. An electric guitarist's tone is determined by both his amplifier and speakers. That's why guitars which are recorded using a normal DI-Box does not sound like a typical guitar setup. Using a normal EQ to try and replicate an authentic sound is generally not particularly satisfying.

Palmer speaker simulators are known to be among the best available today. The **PDI-09** utilizes the same tried and true filters that the **PDI-03** and **PGA-04**.

RANGE OF APPLICATION

With **The Junction** we've developed a DI-Box that simulates the typical frequency response of a guitar amplifier's loudspeaker. Since speaker models differ in sound, a filter has been integrated to help you adjust the particularly critical area of higher frequencies.

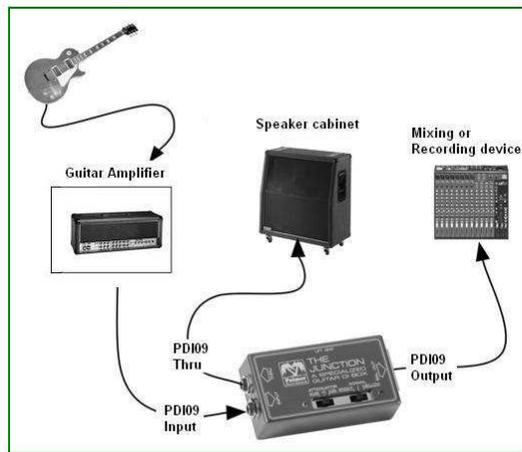
The Junction PDI-09 can process line signals coming from preamplifiers and effect devices as well as speaker levels. **The Junction** works on a purely passive basis and always requires preamplification--thus it is not designed to directly connect the guitar to a mixer.

We all know that the sound quality of a guitar amplifier and its speakers are essential to your tone. For the longest time the only way to amplify this sound was to use the classic approach in a microphone. However, in real-life stage and studio applications, a direct signal from a guitar amplifier can make life much easier. Live, as the acoustics change from night to night, a powerful and crunchy sound from one night can turn into mud the next. In many performance venues, the acoustics can be unpredictable. The audio engineer also has to constantly adjust to different setups since a concrete stage sounds quite different from a wooden stage. **The Junction**, on the other hand always produces the same results. With a direct signal both the guitarist and the engineer have a consistently great tone to work with night after night. As an added bonus, microphone cross-talk and feedback are completely eliminated!

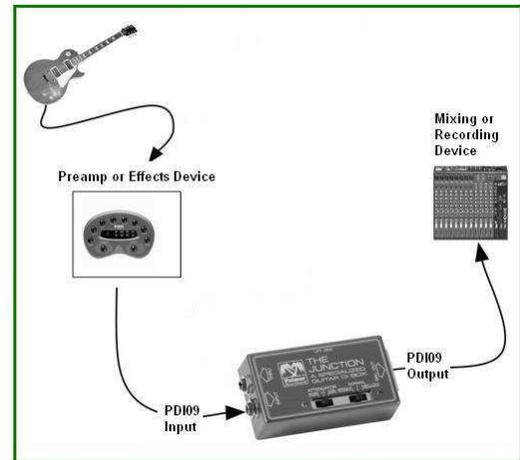
Home studios benefit from the filtering circuit from the **The PDI-09** when recording preamps and pedal boards direct to the console.

The Junction is the shortest link between your pre-amp/multi-effects unit/guitar amplifier and the mixing console. You'll be amazed to hear how good your favorite tone sounds through the **PDI-09 DI-Box**.

CONNECTIONS



OR



Pre-amps, effects units and anything else with a line output, should be connected to the **PDI-09's** input jack using a good quality shielded instrument cable. Guitar amplifiers (heads as well as combos) should be connected to the input of the **PDI-09** using a speaker cable. The **PDI-09's** "THRU" will be used to connect back to the speaker (using a speaker cable). If your amplifier has multiple speaker outputs then these can also be used to connect to **The Junction**. Since the **PDI-09** does not **load** the speaker output, no change will take place in the amplifier's impedance adjustments. If your amp has a variable impedance switch, it should be set at the impedance of your speaker/speaker cabinet or external load box. We find that best results are achieved with strong input levels. That's why we always prefer a speaker signal as opposed to a line signal.

CAUTION: Keep in mind, that tube amplifiers (power amps) MUST always have a load (speaker) connected. You MUST have a speaker or equivalent load box connected to the 'thru' jack of the PDI-09 or considerable damage to your amplifier may occur. The PDI-09 DOES NOT POSSESS SUCH A LOAD, AND SHOULD NEVER BE USED AS A SPEAKER REPLACEMENT! We offer other devices such as the **PDI-03** and **PGA-04**, which have a "dummy load", and can substitute for a speaker in case you want to use a tube amp "silently". Transistor amplifiers and tube pre-amps do not need a load (speaker) connected to their output.

The **BAL.OUT** (balanced output) jack delivers a microphone signal. Using a microphone cable (balanced and shielded with XLR connections) connect to the microphone input of the mixing console. In conforming to industry standards, **The Junction's** output is equipped with an XLR/m jack where pin 2 is hot resp. + phase. As any good DI-Box should, the **PDI-09** also implements a galvanic isolation between the input and output, which is the safest way to avoid humming caused by a ground loop.

SWITCHES AND THEIR FUNCTIONS

The Junction has three switches with the following functions:

ATTENUATOR: Used to adjust the output/signal level coming out of the **PDI-09**. As a general guide, you can use the following settings: 0 dB for pre-amps (line level output or instrument level signals such as a pedal board), 15 dB when using lower wattage amps (practice amps) that do not exceed 10W output power, and 30 dB for higher wattage amplifiers.

(TONE SWITCH) BRIGHT NORMAL MELLOW: This switch influences the critical high frequency area of guitar speakers. Is very simple and offers three options. We purposely avoided using such terms as "4x12 closed back" because even identical cabinets with different speakers do not sound the same. That being said, there is no doubt that we all associate different cabinets with certain sound expectations.

The **NORMAL** setting achieves the linear response characteristics similar to that of an open "2x12" cabinet. The **MELLOW** setting would produce a speaker sound much like that of the vintage American speakers that tend to deliver a warmer, softer sound. Use the **BRIGHT** setting if you want the more crunchy, aggressive sound associated with a typical British speaker.

GND LIFT: Ground-Lift-Switch. As mentioned earlier, **The Junction** delivers a balanced floating signal. Use LIFT when you have a grounded device and console. In some cases, when devices connected to the **PDI-09's** input are not grounded (for example-battery or adapter powered effect devices), a bright humming is produced. Eliminate the humming by switching the **PDI-09** to GND.

CAUTION

All audio transformers are quite sensitive to magnetic fields. Before you permanently install the **PDI-09** in the back of your amp, you should make sure the location is suitable by temporarily installing the device. Make sure it is not too close to the output transformer, or you will get inductance hum.

TIPS

EQ Tips: Cabinets with 10" speakers often have more presence than 12" speakers. Boosting the lower frequencies (80-120HZ) at the mixing console will give you a "fatter" sound similar to that of the 4x12 cabinet. By adding upper mid range frequencies (2-4KHZ) and cutting the lower frequencies, you would produce the thinner open back 2x10 sound. Somewhere in between you will get the 2x12 cabinet sound. Remember, these tips would be used to enhance the filter settings of the **PDI-09**. Trying to accomplish the same thing by using a conventional DI box would not have the same results.

The **PDI-09** is more than just an alternative to a microphone. Suggestions such as hooking up your distortion pedal or pedal board direct using the **PDI-09** can lead to exciting new directions. Additional new possibilities present themselves in using a lower wattage amplifier cranked to the max for distortion and then plugging it into a larger amplifier using the **PDI-09**. You have just turned a tonally cool, smaller amplifier into a larger, stage compatible amplifier. To accomplish this setup, you must have a specially wired cable and connect your amplifier as follows: First, connect the smaller amplifier speaker output to the 1/4" input of the **PDI-09** using a speaker cable. Then connect your speaker or appropriate load box to the 'THRU' jack using an additional speaker cable. Now, buy or make a shielded cable that is 1/4" mono male (guitar plug) wired to female XLR/Cannon. The XLR/Cannon end must be wired with pin 2 hot, wired to the tip of the 1/4" plug, and pin 3 wired to the shield or sleeve of the 1/4" plug. **NOTE:** Pin 1 of the XLR is left open or unused. This unbalances the output of the **PDI-09** and allows you to plug directly into the input jack of a larger amplifier.

Another option would be to drive rack effects at line level and then use your favorite stereo power amplifier to power your speaker cabinets. You have just turned your amplifier into a pre-amp.

Have fun experimenting with your Palmer PDI-09 "The Junction"

GLOSSARY

Galvanic isolation means that there is no electrically conducting connection between the two points. This is the case with a transformer: the signal is transmitted between input and output by varying magnetic fields. In digital electronics you can employ opt couplers, in which case the signals are transmitted by light impulses.

You can differentiate Hum caused by ground loops from other low frequency interferences simply by connecting the mass of the two devices (e.g. metallic parts of the chassis) to provoke the system to hum. The reason for ground loops is that ground potentials are not always exactly the same. Due to different cable lengths and other factors a slight displacement in the ground potential can take place. So if you connect two devices with different ground potentials to each other, a current will flow between them over the shielding of the audio cable. As a result a hum at mains frequency (50 or 60HZ) including its harmonics will overlay the signal. The more experienced users will be able to determine a ground loop by its sound alone. Other humming caused by interferences sounds brighter and has more harmonics compared to the hum caused by a ground loop, which sounds sonorous and deeper.

SPECIFICATIONS

Passive DI-Box with an integrated LCR-filter to simulate the frequency response of a typical guitar speaker in its casing.

Input: Mono jack socket: ¼ " jack with parallel "THRU" jack
Max. Input voltage 40V
(200Watt speaker output, impedance 8 Ohms)
Input impedance: nominal 2kOhms

THRU-jack: Mono jack socket parallel to the input. For looping through the input signal. Does not function as an input jack.

Output: XLR/m jack balanced, pin 1= ground (or casing mass), pin 2 + phase (hot), pin 3 phase (cold)
Output impedance: Nominal 600 Ohms

Switch : ATTENUATOR: 0 dB for line signals
 -15dB for small amps up to 10W
 -30dB for large amps up to 200W

Switch: MELLOW-NORMAL-BRIGHT (Selects between a mellow, linear, or bright rendition of the signal)

GND LIFT: Ground-Lift-Switch
Connects or breaks the ground connection between the jacks and XLR pin 1

No battery necessary

adam hall

Copyrighted & Manufactured by: **Palmer, a Division of Adam Hall GmBH**
Rudolf Diesel-Strasse 5, D61267 Neu-Anspach, Germany
Tel.: +49 (0) 6081 94190 Fax: +49 (0) 6081 43280 Email: palmer@adamhall.com



USA and CANADA Distributor: **JAMS Audio**, NASHVILLE, TN. www.PALMERGEAR.com
PHONE: TOLL FREE 1-866-380-5267, FAX: 1-866-389-5267
E-MAIL: jamsaudio@palmergear.com