

Triad User's Reference

PSIONIC AUDIO



PREAMP

The first stage of the Triad is an extremely high quality analog preamp with gobs of gain available (from unity to +30dB) and a subtly addictive tonal enhancement.

FX/BOOST 1

The second stage of the Triad is a switched loop that can be configured for series or parallel use, with separate Send and Return controls. This can also be used as an additional gain boost stage (see p. 4).

BOOST 2

The third stage of the Triad is a selectable adjustable boost ranging from unity to +10dB, with a uniquely musical tone control.

TRIAD CONTROLS

Choose a Triad control above to find out more about its operation. While the Triad is intuitive and can be used right out of the box without looking at the manual, there are some options and uses that are not obvious at first glance.

It's important to know the unity setting of each knob so you can have a proper gain structure for lowest noise and optimal tone. Choose a Triad control above to find out more about its operation. While the Triad is intuitive and can be used right out of the box without looking at the manual, there are some options and uses that are not obvious at first glance.

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OUTPUT AND INPUT JACKS

High quality rugged nickel-ringed Neutrik jacks, offering long life, reliable contacts with a large surface area, a secure connection to the chassis, and an intelligent separation of audio ground from chassis/shield ground.

Oh, and we think they're pretty.

If nothing is plugged into the Input, then the circuit is grounded out, muting the output of the Triad.

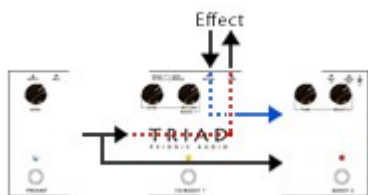
BYPASS/ACTIVE SWITCH

This one's a little sneaky. With this push button switch depressed, the Triad operates as you would expect. If this switch is out, though, then the signal is routed directly from the Input jack to the Send and then from the Return to the Output, regardless of whether the Triad Preamp, Loop, or Boost are active. This lets you use any delay, reverb, or other effects you might place in the Triad loop without using the Triad preamp.

SERIES/PARALLEL SWITCH

With this push button switch depressed the Triad Loop operates in parallel mode. With the switch out, the Triad Loop operates in series mode.

SERIES SIGNAL FLOW



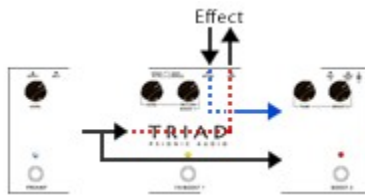
This section explains the signal flow in the Triad's FX/Boost 1 stage. As relatively few guitar pedals offer a series/parallel mixing stage, this can be a new area for most players to explore.

This is really a combination Aux Send/Return and a Series/Parallel mixer combined into one. This is commonly found in recording studios, and allows a lot of "studio tricks" to find a home on a pedal.

board. Using the Triad FX/Boost 1 stage in parallel allows the player to keep the dry signal analog at all times, only blending in digital effects such as delay or reverb behind the analog dry signal.

Take time to read each subsection listed above so you can best make use of the Triad's features in your personal tone quest.

PARALLEL SIGNAL FLOW



In parallel mode there are two paths - one inside the Triad from the Preamp to Boost 2, and one running from the Preamp through the loop to the Boost 2 stage, where it is mixed with the direct path.

This allows you to run the delay or reverb pedal in 100% wet mode, so your dry signal stays inside the Triad and is always analog, while the delay or reverb is mixed in behind your dry signal.

In addition to not running your entire tone through cheap converters, this allows for natural sounding "spillover" transitions.

But experiment with Series and Parallel Modes and different pedals - there are lots of creative options available. Try a wah, whammy, or overdrive (or all three at once) in parallel!

BYPASSED SIGNAL FLOW



The FX/Boost 1 Bypass mode signal path is the same in both Series and in Parallel Modes.

USING FX/BOOST 1 AS A BOOST STAGE

If you'd rather use this stages as an additional boost, simply connect a short cable to the Send and Return jacks and set the loop to Parallel mode. This will now give you up to a 12dB gain increase when this stage is active (controlled by the Return level control when the Send level control is at maximum). Alternately, you could use this stage as a preset lower level should this be useful – if so, set the loop to Series mode and turn down the Send level control as needed for a gain decrease.

LOOP SEND AND RETURN JACKS

Another obvious one, but there are couple of things here you need to know. First, the tip of the Return jack is normalled to ground, so if no cable is plugged into the Return jack, the Loop input to the Mixer stage is grounded out, for lowest noise.

Second, the Return jack does not have its ground connected. This is done to prevent ground loops and to prevent the signal cables in the loop from forming an antenna, picking up noise and radio frequencies, particularly at high gain.

LOOP RETURN GROUND SCHEME

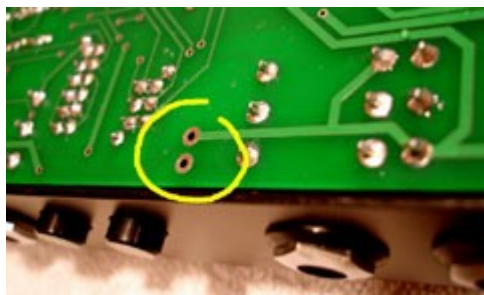
The Return jack sleeve connection is not connected to signal ground. This prevents ground loops when using the second stage as a loop, and prevents the cable in the loop from acting as an antenna for RFI and noise. This works in both parallel and in series modes, with no loss of signal under normal operation.

However, you may find that you either lose signal completely or there is a lot of noise when you activate the loop. This will generally be an indication that you are using a bad cable, or one where the ground has been disconnected. Replace or repair the cable and retest.

In the very unlikely event you have noise or a loss of signal when using the loop, and you have tested the cables involved and found them to be working well, then read these instructions on modifying the Loop Return ground scheme:

MODIFYING THE LOOP RETURN GROUND SCHEME

Carefully remove the four stainless steel screws on the Triad and gently remove the bottom cover. On the bottom of the circuit board there are two holes vertically aligned in the middle towards the edge where the jacks are:



One hole is connected to the Return jack sground, and the other hole to signal ground. You can bridge these with a short piece of wire and then solder the wire to the solder pads surrounding the holes. This will tie the Return ground to signal ground but at the cost of possible ground loops or RFI being introduced into the signal.

**Please do not attempt this if you have no prior soldering experience.
Do not modify any other part of the Triad circuit. Any other modifications will void your warranty.**

INCOMING 9VAC POWER JACK

This is the jack that powers the Triad pedal. It accepts a 2.5mm 9vac supply, with a minimum current requirement of 100ma to operate the Triad by itself, though 1A or greater is recommended if you want to use the 9.6vdc outgoing power jack to supply power to connected pedals.

INCOMING 9VAC POWER SUPPLY

The Triad requires a 9vac power supply, which then provides the opamps with 30vdc rail to rail, for max headroom and lowest noise.

KNOWN GOOD 9VAC SUPPLIES FOR THE TRIAD:

These are not the only supplies that work, but these are known to work. Any 9vac supply rated at 1200ma to 2000ma with a 2.5mm plug will work for powering the Triad and up to 300ma worth of Triad-powered 9vdc pedals. If you are using the Triad by itself and will not be powering 9vdc effects from the Triad, you can use a supply with only 150ma, though given the negligible cost difference, I recommend using the 1200ma and up supplies.

The Voodoo Lab Pedal Power AC

The Juicebox from pedalgear.net (please contact Psionic Audio if you plan on using the Juicebox - there's a trick to it)

The Line6 PX2 supply (long with inline transformer)

The Rocktron supply (with wall transformer)

Note: the Voodoo Lab Pedal Power 2 does not power the Triad, as it only puts out DC power.

OUTGOING 9.6VDC POWER JACK

This jack can provide 9.6vdc power to external pedals. The output is tip negative with a 2.1mm barrel (Boss standard). How many pedals depends on the current needs of the pedals and what power supply you use with the Triad. If you use a recommended 1A or greater supply, you can power up to 900ma worth of external pedals.

It is vital that you do not plug the 9vac supply into the 9.6vdc jack. This can damage the Triad.

USING THE TRIAD TO SUPPLY 9.6VDC TO OTHER PEDALS

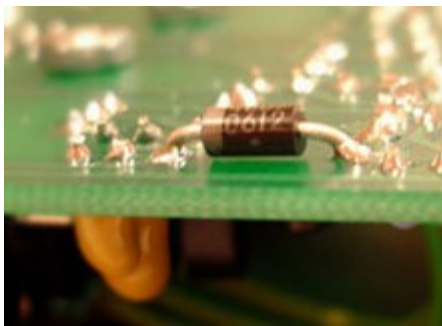
The 2.1mm "Boss" standard jack on the rear provides 9.6vdc power, allowing the Triad to supply power to connected tip negative 2.1mm 9vdc pedals.

To power more than one pedal, a daisy chain or parallel power cable must be used. Both Boss and Visual Sound offer standard 2.1mm tip negative daisy chain cables. As users inform me of other known good sources I will list them here.

Up to 300ma worth of pedals can be powered safely by the Triad. As the average guitar pedal uses between 30ma and 50ma of power, with big hogs like the Boss twin pedal series taking 200ma, the Triad can easily power the average sized board.

Notice the plug in the 9.6vdc jack. This is there to prevent the user from accidentally plugging the 9vac supply into the 9.6vdc jack. This plug just pulls out, but please read this information before you remove it:

It is important that the Triad owner never plugs the 9vac supply into the 9.6vdc jack. Doing so will release the magic smoke and smell terrible, but the repair is inexpensive and easy.



Note: The information below only applies to Triads sold before Sept of 2007

As there was no way to use power jacks that would prevent the 9vac from going into the 9.6vdc jack without using rare and hard to find plugs, I put in a protection diode. This diode will prevent the Triad circuit as a whole from being damaged if you plug the AC supply into the DC jack, but in doing so, this diode will give up its life (in a spectacularly smelly way).

The diode pictured is a 1N4002 though one can use a 1N4004 or 1N4007 as well. It costs about \$0.30 new, and can be purchased at Radio Shack. I will gladly send Triad owners replacement 1N4002s as needed, though buying one locally will usually be faster.

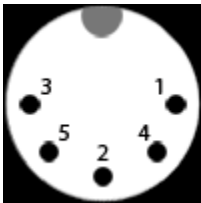
Any tech or person with moderate soldering experience can replace this diode. To make such a replacement as easy as possible, I left this diode on the bottom of the PCB. The diode can be replaced without removing anything other than the bottom cover (held in place by four screws).

EXTERNAL CONTROL JACK

This is an unusual jack that allows for external control of the three primary Triad switching functions: Preamp, FX/Boost 1, and Boost 2.

This can be controlled by a custom interface box in conjunction with a standard MIDI relay switcher, or directly by the (now sadly discontinued but still widely available) Axess Electronics CFX4.

Note: This is NOT a MIDI jack, but does use a 5 pin DIN connection.
The pinout is as follows:



1. Preamp switching
2. Boost 2 switching
3. Ground
4. FX/Boost 1 switching
5. 9vdc

When a connection is made between the pin associated with a switch and ground, the switch is activated. The 9vdc is provided as a courtesy to power LEDs on possible custom remote switches, but should not be used when connected directly to the Axess Electronics CFX4 or any other MIDI device.

This is all made possible by the use of high quality quiet relays for primary switching functions in the Triad.

RELAY SWITCHING

The Triad, like all current Psionic Audio products, uses relays for all primary switching functions. Using high quality relays rather than standard physical switches has a number of benefits:

- Greatly reduced switching noise
- Shorter audio paths
- More intelligent circuit layout
- Longer life spans for the relays compared to physical switches
- Fewer wires to the footswitches, for ease of future maintenance
- Allows for remote (external) control of relay switching

PREAMP LEVEL CONTROL

This controls the level of the preamp when the Triad is turned on (blue LED is lit). The knob is at unity when fully counterclockwise and offers a maximum gain increase of 30dB when fully clockwise (this is an extreme amount of gain). I suggest starting out with the preamp Level at unity and then turning it up slowly, listening to how the amp sounds and reacts as the gain increases.

Unless the Preamp Level is cranked, the Triad itself has tons of headroom, so it will get along with just about any pedal used in front of it. If you have a Overdrive or Distortion pedal that you love with your amp, you'll still love it in front of the Triad.

FX/BOOST 1 SEND LEVEL CONTROL

This controls how much signal is sent out to the loop, and affects both Parallel and Series modes. Unity is fully clockwise, and fully counterclockwise is off - no signal is sent to the loop.

If you have a delay or reverb, etc, in the loop, using parallel mode, you can control the amount of effect heard here on the Triad.

FX/BOOST 1 RETURN LEVEL CONTROL

This adjusts the Return level from the loop. Center (with a detent) is unity gain, with 3dB of attenuation fully counterclockwise and 9dB of gain when fully clockwise.

Note that when used in Parallel mode with a cable between the Send and Return jacks, there is an automatic +3dB level increase when the Loop is activated, even with the Return set at unity (noon). In this mode of use, turning the Return fully counterclockwise returns to unity, while turning fully clockwise offers +12dB of gain. This allows the Loop to be used as a second gain stage, separate from the Boost 2 stage.

Note: the Loop is only available if the Preamp is active (with an exception noted in the Bypass/Active Pushbutton section).

BOOST 2 TONE CONTROL

The Tone circuit is only active when the Boost 2 stage is engaged. With the Tone knob fully clockwise the Tone control is again out of the circuit. As the knob is turned counterclockwise, the tone circuit is engaged and smoothly rolls off the very high end without losing depth and detail. There is no mud, no nasal honk, and no loss of volume, as are common with most tone controls.

The tone control can be used to make leads fatter, of course, or to tame the slight harshness that some amps (particularly Fender blackfaced amps) exhibit when the input is hot.

BOOST 2 LEVEL CONTROL

The Boost 2 section is simple. Whatever level the Preamp is set at (plus whatever boost might be added from Stage 2) can have an additional 10dB of gain added on top. Setting the Boost 2 knob fully counterclockwise sets the gain at unity, defeating the Boost but turning on the Tone control. As the Boost 2 knob is turned clockwise, more gain is added.

Note: the Boost 2 is only available if the Preamp is active.