



92798 Cape Arago Hwy  
Coos Bay, OR 97420  
Phone (541) 888-3517  
Fax (541) 888-4846  
www.kksound.com

## TRI-TONE 3-CHANNEL ACOUSTIC PREAMP



The Tri-Tone is a 3-channel acoustic preamp with one designated microphone channel and two transducer/pickup channels.

The mic channel is designed for electret condenser internal guitar mics. It supplies the necessary power to the mic. Channel 1 and 2 are identical and optimized for piezo based acoustic transducers or other pickups like a magnetic sound hole type. Thanks to the adjustable gain controls on each channel many different brand pickups can be used.

A typical setup consists of two pickups (like the K&K Pure and the K&K FanTaStick pickup) and a mic (like the internal Trinity guitar mic). This preamp offers

great flexibility with its in- and output options and the individual phase switches. It features XLR and line mix outputs for live performance and individual line outputs for a recording setup.

### Power Supply Information

The Tri-Tone preamp comes with a designated 12-volt power supply. Do not use any other power supply. The model we use works on all voltages from 110 to 240 volt. The power supply is specially filtered to be noiseless. Other power adapters may introduce a 50/60 Hz hum or their polarity may be reversed, which can harm the Tri-Tone's circuit. Tri-Tone is not phantom powered (it needs too much amperage for that), but phantom power will not harm it.

### Mix Outputs

The preamp has two mix outs: line 1/4" mono and XLR balanced. They can be used individually or both at the same time, e.g. line-out to monitor amp and XLR-out to PA.



Typical input and line-mix-out (silver plug) setting -or- setting with both, line- and XLR-mix-outs

## Inputs

There are three individual channel 1/4" inputs.

The input of channel 1 is a T-R-S (tip-ring-sleeve) stereo connector. It is configured TIP to channel 1, RING to channel 2. If you use a stereo cable here, this input will distribute the input signal to channels 1 + 2. If a mono cable is used here it will get you channel 1 only. The inputs of channel 2 and 3 are both mono 1/4".



*Stereo plug Ch. 1 IN (line-mix out shown)*



*3 mono plugs used (XLR-mix-out shown)*

## Individual Output Mode

The individual output of channel 2 (**silver nut**) switches the unit into the individual output mode. If a mono 1/4" cable is inserted here both mix-outputs (line and XLR) are switched to channel 1 individual outputs. The cable you plugged into channel 2 out will carry channel 2 only. The 1/4" output of the mic channel carries the mic signal only (this one is actually always available as individual output, it works in mix-out mode as well). The individual output mode requires you to set the master-volume to **full** and leave it there. Use the individual channel volume controls to adjust the 3 volumes.



*or: IN ch.1 stereo plug*



## How a Phase Switch Works

Phase switches are usually marketed as a feedback-controlling device, but they accomplish more than just that.

What is phase? Phase determines at what point in time a sound wave has it's peak or bottom.



This picture shows two simple (identical) sine waves, but the wave on the bottom (2) is inverted in respect to the wave on top (1). Interestingly enough, if these 2 waves were played back simultaneously, they would cancel each other out and no sound be heard.



Amplification systems and any foot pedal or effect unit may or may not invert the phase with respect to the signal sent in. In most cases the manufacturers do not specify.

Every acoustic instrument projects (acoustic) sound waves in a certain phase when it is played unplugged. The phase that is projected from the amplified speaker source needs to be "in phase" with the acoustic instrument's own sound-waves or the result will not be optimal. An out-of-phase problem is indicated by early feedback, tinny-unbalanced sound which may be tolerable in some tone ranges (positions on the fret board), worse in others, and quite noticeable phase cancellations on some notes.

Tri-Tone's phase switches allows for instant correction of this problem. You will experience a fuller, warmer and nicely balanced tone with less feedback one way. This is the correct phase switch setting. Keep in mind that it may be different with different amplification systems.

**About Tri-Tone's Phase Switches:** This unit has 3 phase switches, one for each individual channel. **In Mix Mode, however, the phase switch of channel 1 will flip the phase of all 3 channels!** This allows for quick "one button" adjustment to fit different amps/PA systems.

### **Make sure to always set the phase on channel 1 first!**

After you accomplished that, simply adjust the phase for channel 2 and 3 so they complement your setting on channel 1. Typically the signal should get louder and fuller when another channel is turned up in addition to channel 1. If the signal gets weaker, the phase of that channel needs to be flipped. We recommend that you begin with all phase switches released. If you use the K&K pickups and mic (and your equipment does not flip the phase) chances are that this is the proper setting. But again, we can't predict how your amplification equipment affects the phase.

### **Difference between Gain, Volume, and Master Volume**

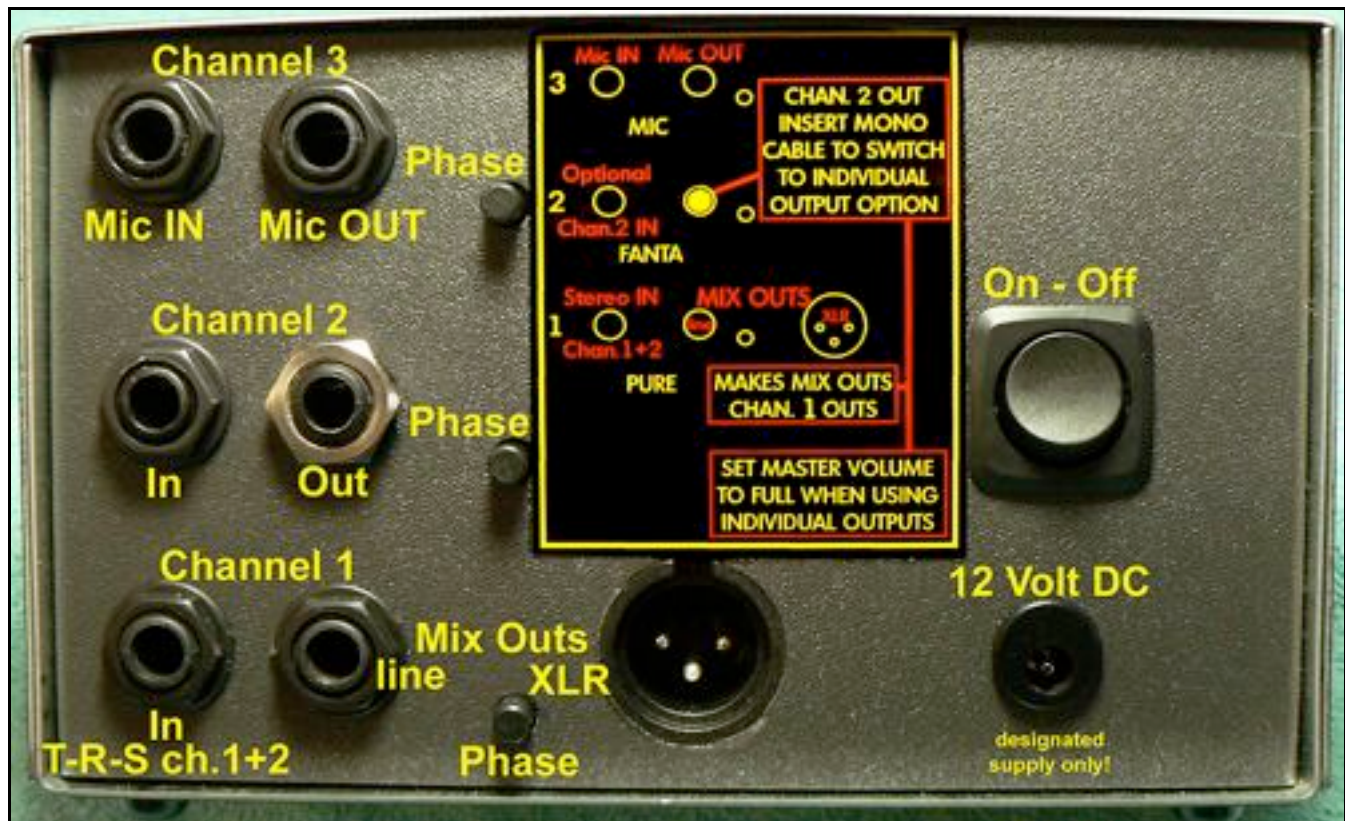
Gain is the sensitivity adjustment on the beginning of a circuit. It sets the amount of pre-amplification.

Volume adjusts the signal at the end of the circuit. It only turns the available signal down. There is no pre-amplification factor on the volume control. If you dial it all the way to the right it simply lets the whole available signal pass.

The 3 individual volume controls adjust each channel, and the master-volume adjusts the sum of them. There is no pre-amplification on the master volume either; it only turns the signal down.

The gain adjustment is a little tricky. If you adjust it too high, you may overdrive the channel and cause distortion. If it's too low, you cannot drive the circuit efficiently. Just play and listen, there is nothing set in stone. Gain also interacts with the EQ. In other words, if you would boost all EQ's to max, the circuit will distort with less gain than with a neutral EQ setting.

In our experience it is a good starting point to simply set all gains to 12 o'clock. In most cases you could boost the gain much higher without distortion, but this also makes the sound somewhat more "aggressive". This is especially true on the FanTaStick undersaddle pickup. Try it and decide for yourself. The mic channel gain needs to be adjusted most carefully, as you not only deal with tone but also with feedback issues.



**USE DESIGNATED EXTERNAL POWER SUPPLY ONLY!**

### Technical Data

- Frequency response: 20-30,000 Hz
- Inputs: channel 1: T-R-S ¼" (tip to chan. 1 ring to chan. 2) – channel 2: mono ¼" - channel 3: mono ¼" (supplies 8 volt to mic).
- Input Impedance: 1 Mega Ohm each.
- Outputs: Mix: Line ¼" mono 100 Ohm, XLR balanced 100 Ohm. Individual: Line ¼" mono 100 Ohm each.
- EQ frequencies: Bass: high pass at/below 100Hz. Middle: extra wide band shelf centered at 1.5kHz. Treble: low pass at/above 10kHz.
- EQ cut/boost range: +/- 20dB, center is neutral, clockwise boost, counterclockwise cut.
- Dimensions: 6 ½" wide x 3.75" deep x 4" high.
- Power supply 12 volt DC center plus, 600mA, special filtered, designated supply only