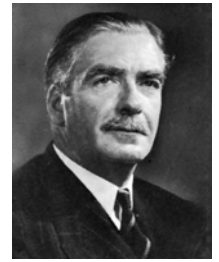
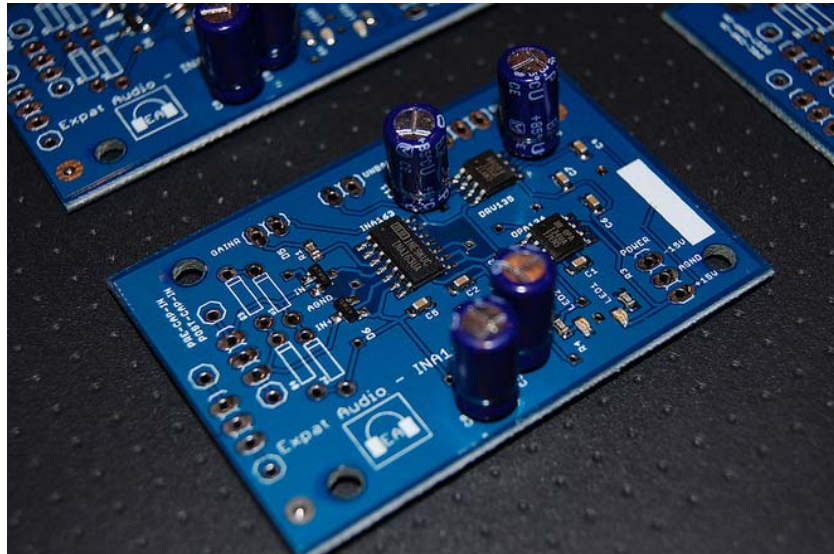


Expat Audio “Eden” Microphone Preamplifier



Clean, Simple, Small and Easy to implement

Named after Anthony Eden – British Prime Minister 1955-1957



Description

The Eden Microphone Preamplifier is Expat Audio’s first pre-manufactured module that can easily be integrated into your own designs. It only requires a bipolar 15V or 18V supply, and an external potentiometer/switch to set gain to get it up and running!

The board comes fully assembled and tested by Expat Audio in Dallas, Texas. Chances of success on power up are very good! The board integrates two LED’s that light up when the power is applied correctly.

The Eden Microphone Preamplifier does not integrate a front end switching circuit for Pad, Phantom and Phase, as different folks implement pad, phase and phantom in different ways. (Discrete switches on a panel, discrete switches on a printed circuit board, switched relay systems)

Features / Benefits

- Gain Range 15dB to 60dB (easily modded)
- 0.003% THD @ 30dB of gain
- Single Ended and Balanced outputs

Performance Specifications

Main performance graphs are done by measuring THD+N at two gain levels. 30dB and 60dB (max).

At 30dB of gain (-30dBu signal in, 0dBu out) the THD+N is a whoppingly low 0.003%.

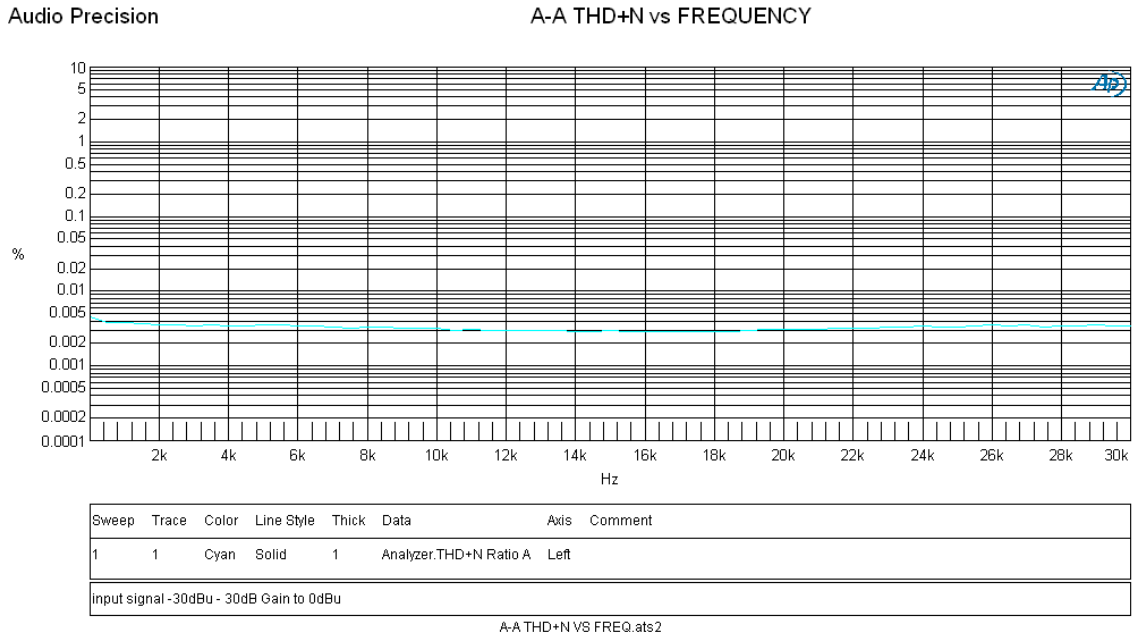
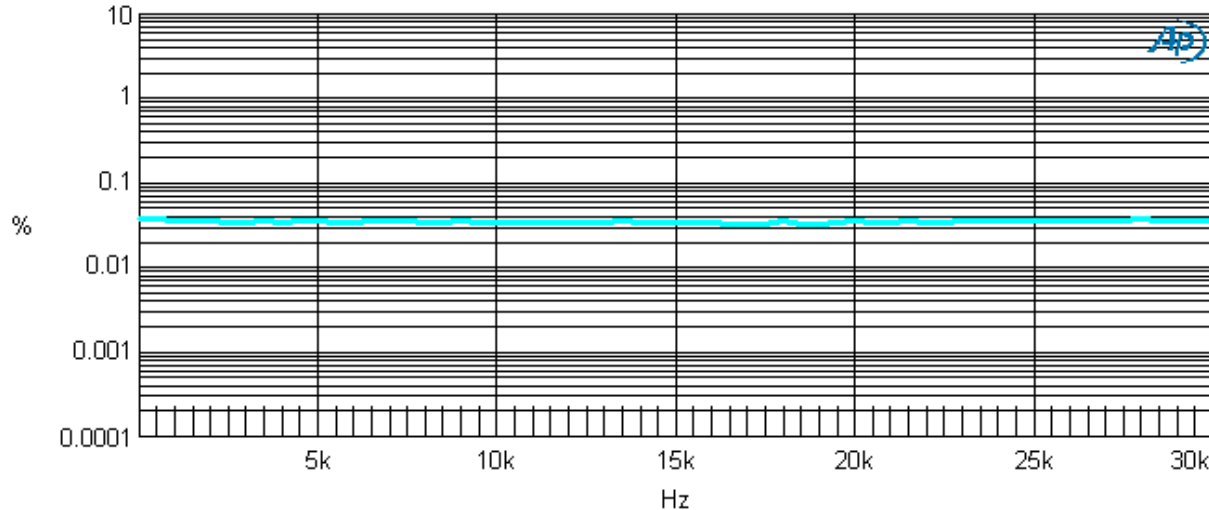


Figure 1 – THD Performance at 30dB Gain

Audio Precision

A-A THD+N vs FREQUENCY



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Cyan	Solid	1	Analyzer.THD+N Ratio A	Left	

input signal -60dBu - maximum gain to 0dBu

A-A THD+N VS FREQ.ats2

Figure 2 - THD Performance at 60dB Gain

Hook up diagrams

Power

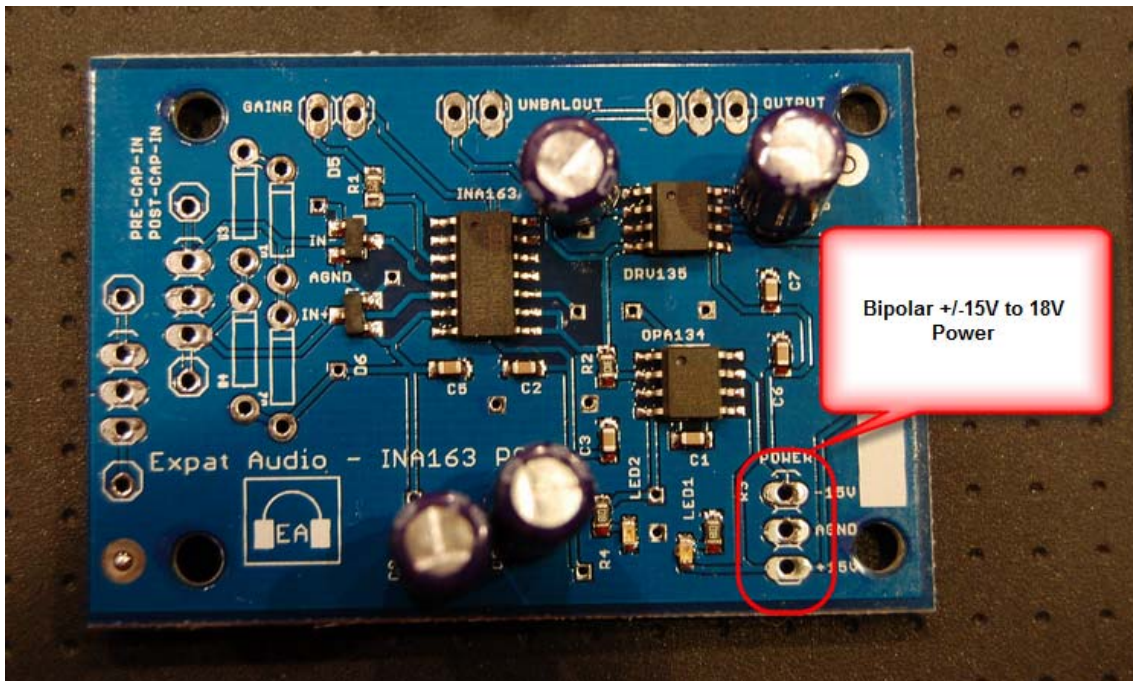


Figure 3: Power Supply Hookup

Signal Output

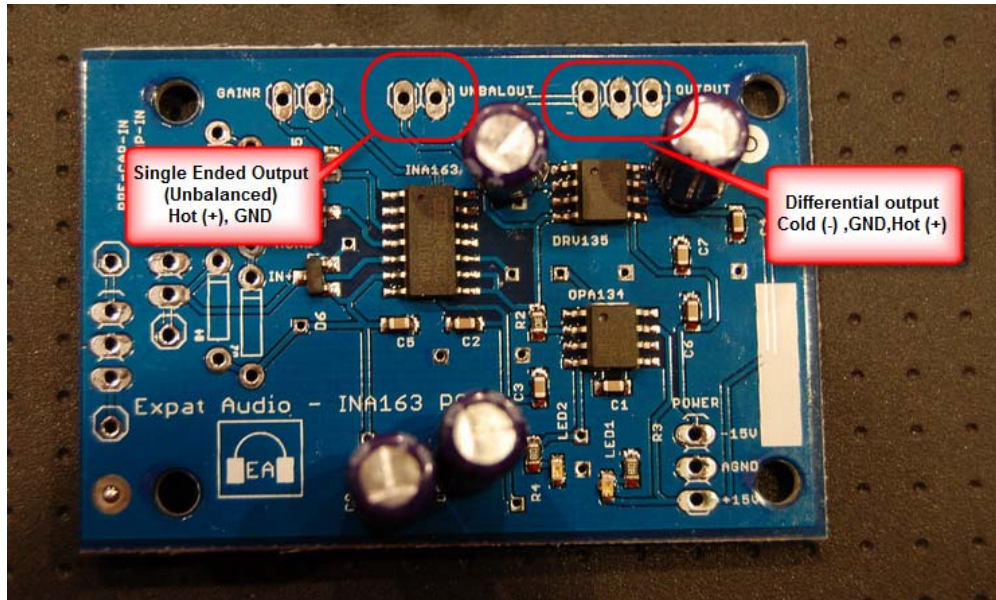


Figure 4: Balanced and Single Ended outputs

Input Connections

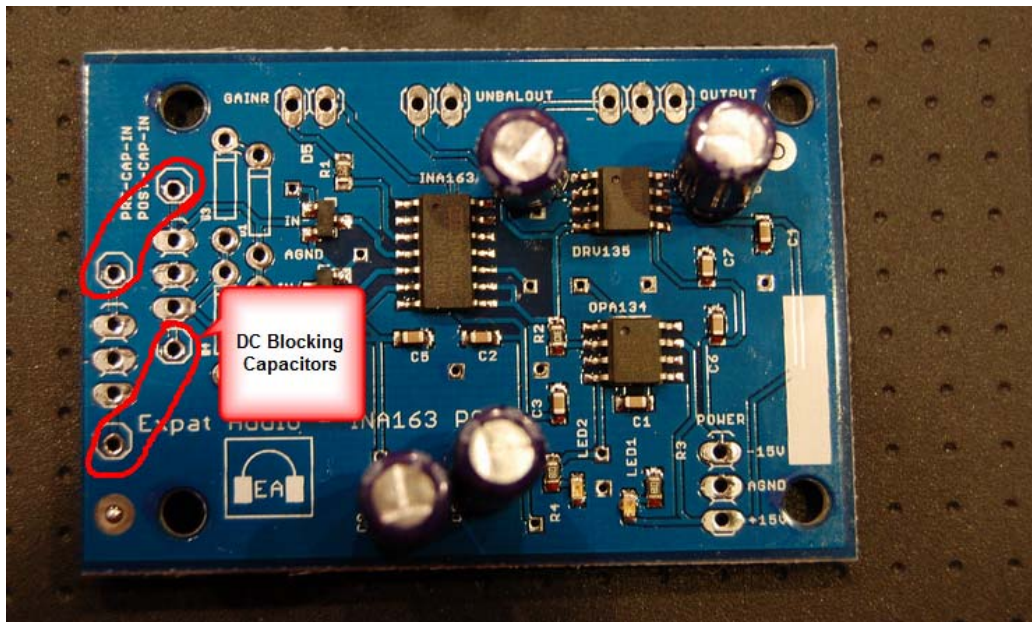


Figure 5: Input Options

If you do have a Phantom power circuit in front of the Eden mic Pre, then DC blocking capacitors MUST be used. Signal (Hot,GND,Cold) can be brought in on the PRE-CAP-IN connector, then put through

capacitors. Capacitors should be inserted as shown in the diagram above. Capacitors should be rated at least 50V.

If you prefer the caps external (due to size etc) then you can simply connect to the POST-CAP-IN.

Input Protection Diodes

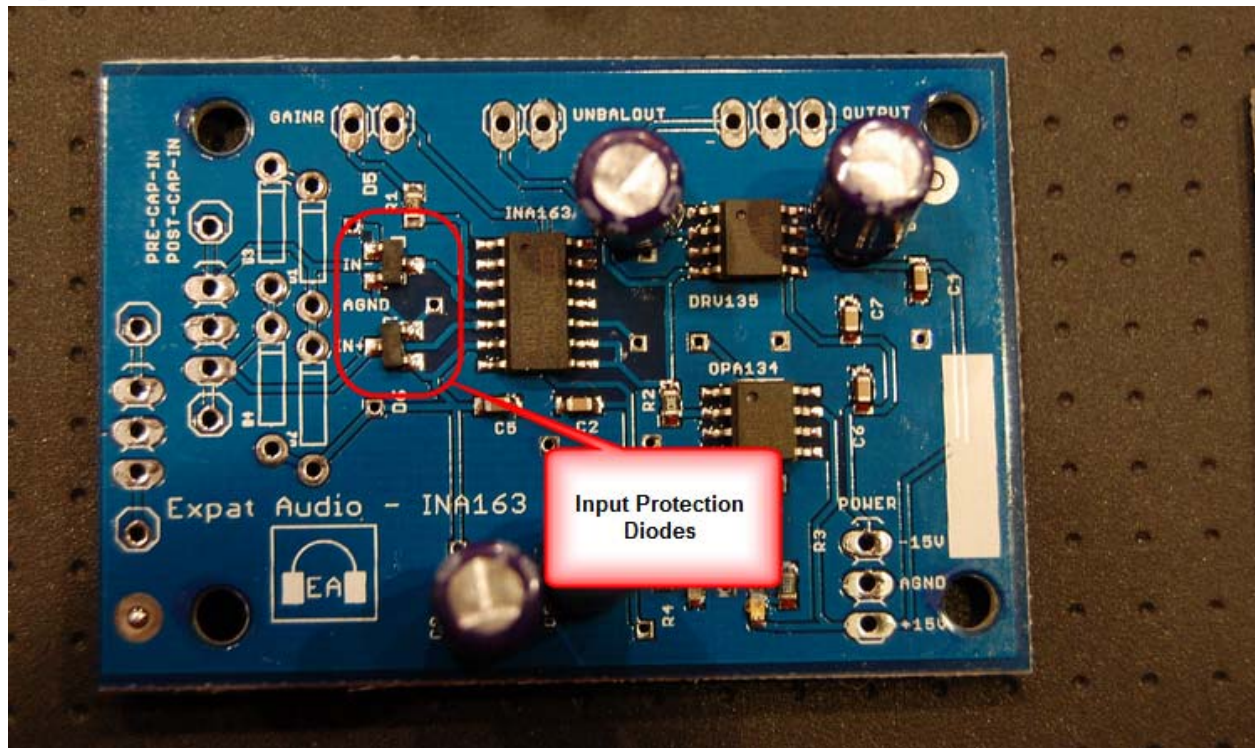


Figure 6: Input Protection Diodes

Two input protection diodes are used on the hot and cold inputs. These are BAV99 diodes that will start conducting when the inputs are one diode drop ($\sim 0.7V$) from the power rails. That means 14.3V if you have a +15V rail. Should you need to replace the diodes with through hole variants, these can be installed in the diode spaces to the left. Be sure to remove the SMD diodes if you go down that path!

Gain Setting Pot

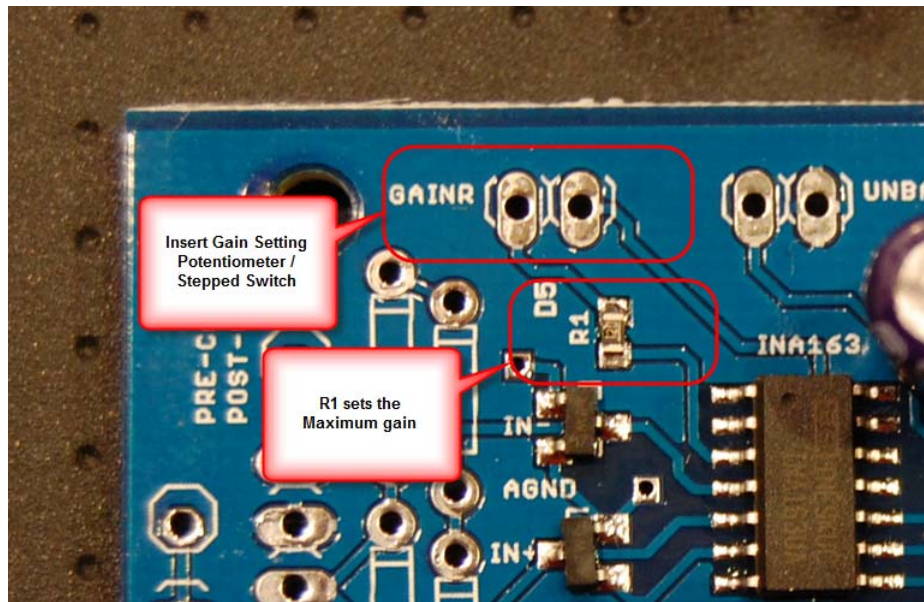


Figure 7: Gain Setting resistor

An external gain pot is connected between the upper connector called "GAINR". We typically use a 5K Reverse Log potentiometer for this function, however, a multi position switch can also be used. For guidance on switch sizes, please see the INA163 datasheet at ti.com. For reference, R1 is currently 120hms, giving a theoretical maximum gain of 54dB. In practice, the gain is closer to 60dB. (as the DRV135 gives an additional 6dB)

System Diagram with other Expat Audio products

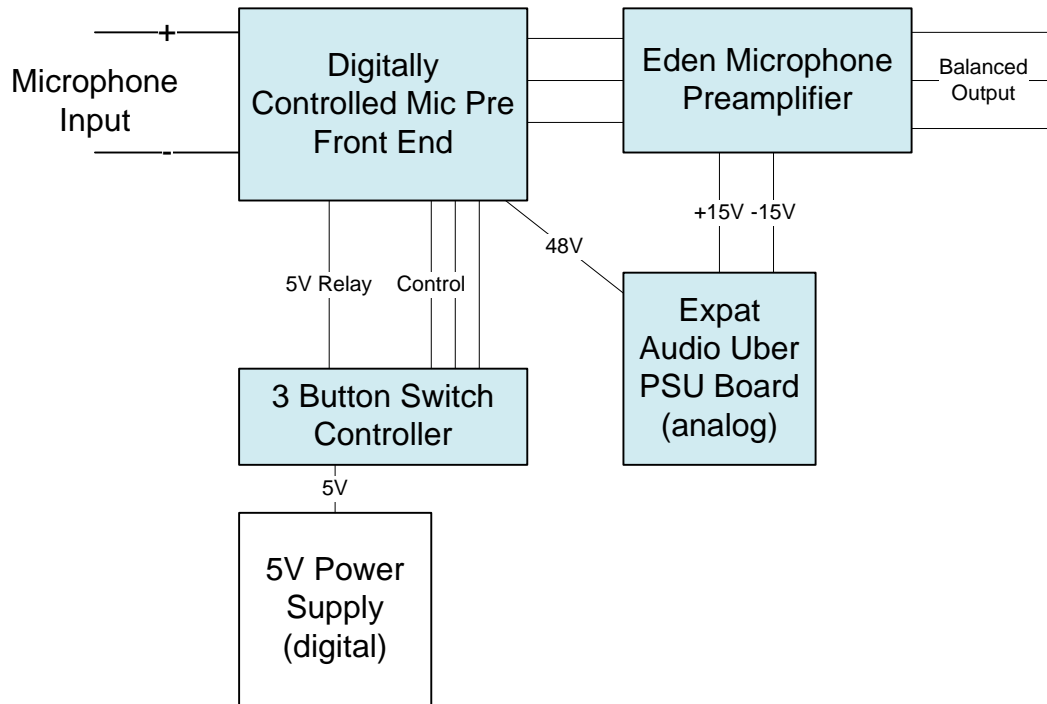


Figure 8: Expat Audio Ecosystem

Expat Audio provides companion PCB's provide an almost complete environment to build your own complete mic preamp system. The Eden Microphone Preamplifier can be comfortably powered by the Uber PSU board, which can provide a low noise Bipolar Power supply as well as a 48V Phantom power rail. The outputs are all filtered to make sure as little noise from your mains supply gets to the mic pre!

For the front end control, Expat Audio has two boards that can make the system a little easier on the eyes, and a little more digital. The 3 button switch controller allows momentary LED push switches to be used along with a digitally controlled relay based front end to switch Phase, Phantom and Pad.

(for a short video of the effect, watch this youtube video:

<http://www.youtube.com/watch?v=yNyNhvKyzyQ&feature=share&list=ULyNyNhvKyzyQ>)

Version Control

PG2.0 (the initial release) is missing two resistors from input to ground. These bias the inputs with DC current. External resistors have been added to the boards to compensate. In the next version PG2.1, these extra resistors will be assembled and placed automatically.