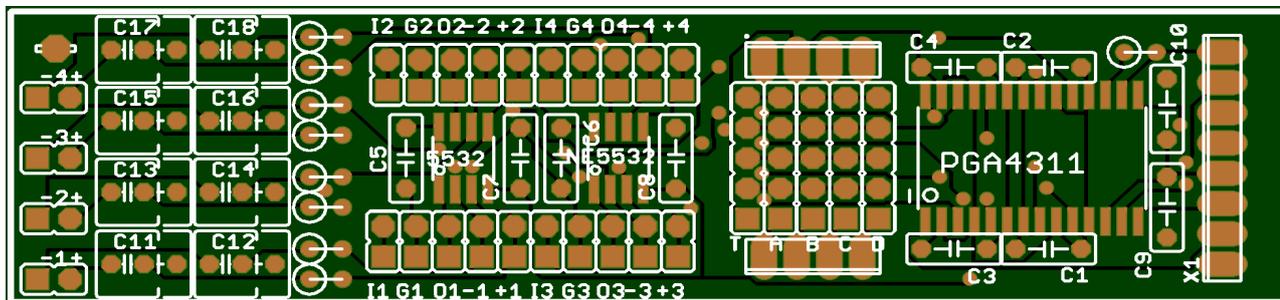


Building the channel board:

This board has many options, and the parts count changes with most of them. You should read it over carefully before starting the build. You'll need to know how many input amps to build, and how you'll want them configured. You'll also need to know which input channels will be routed to which output channels.

The bare channel board looks like this:



The

parts needed are:

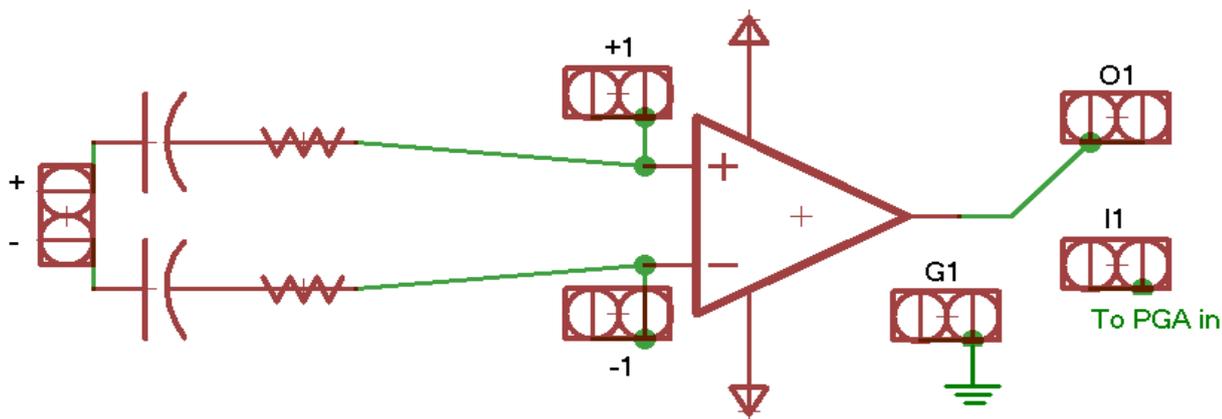
- 1 PGA4311 4 channel audio volume control
 - 5 Capacitors, 0.1uf
 - 1 Capacitor, 1.0uf
 - 17 Stack pins
 - 1 NE5532 SOP Amplifier for each 2 input channels
- For each input channel, please add:
- 1 (unbalanced) or 2 (balanced) 0.1uf poly capacitors
 - assorted resistors to set input gain as desired.

As before, I will describe the build for a single input channel, you can repeat it for the others channels as needed.

We will start the build on the left. Add a dual-row right angle header at the input position. You may use a single row right angle header if all inputs are unbalanced. You may use a dual-row right angle header and pull every other set of pins if you like. In all cases, headers must be right angle, as there will not be enough room between the boards for connectors. Connecting your input wires directly to the board is less expensive, more reliable, but a bit of a pain to make changes to later.

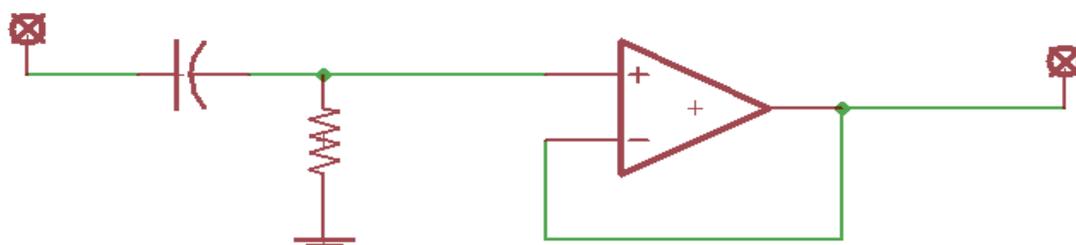
The input sections of this board are infinitely configurable. It is not my intent to cover all possible combinations. I will document the simplest common input setup. Unbalanced, unity gain input. This is appropriate for line level connections, such as from a CD player, stereo equipment, or synthesizer outputs. It is NOT the correct input for electric guitars, microphones, or balanced input signals. I have taken some pains to make these inputs as flexible as possible. It will be up to you, as the builder, to figure out what you want, and adapt it to this circuit. Please share your experience with others!

The input section of the channel board looks like this:



From

that you can make a LOT of different input sections. A VERY simple input section would be the Unity gain unbalanced input buffer. It's very simple, and looks like this:



Figuring this out shouldn't be too tough. We follow the input from the "+" input terminal through capacitor C11. We don't need a series resistor here, so we add a wire for the bottom resistor beside C12. We do need a 10K resistor from the + input of the op-amp to ground, so we add it, between the "+1" and "G1" terminals. Then, for the feedback loop, we add a jumper from "O1" to "-1", finally, we connect "O1" to "I1" to pass the result to the PGA input.

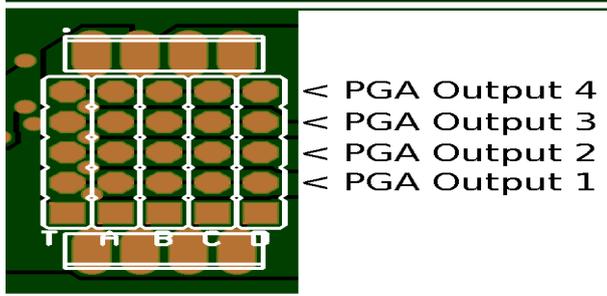
There is a full discussion on input choices [here](#), but this is the build guide, so onward we go.

If you want your input circuits to be adjustable, you can add right angle headers to the board, and create your own "plug-in" modules. If you do, remember to power down before unplugging an input module. Otherwise you may experience "infinite gain", Your speakers may not survive it. 😊

Now back to choices. If you are building a "full" mixer, you'll need only one input per channel board, but it should feed into all four PGA inputs.. Add jumper wires to connect "I1", "I2", "I3", and "I4". This allows mixing the single input channel into Left, Right, Effects1, and Effects 2.

If you're building a stereo line mixer, you probably won't have effects loops. You'll want four separate input channels (two stereo feeds), each going to it's own PGA input. Whatever you need, you can set up the signal distribution from here.

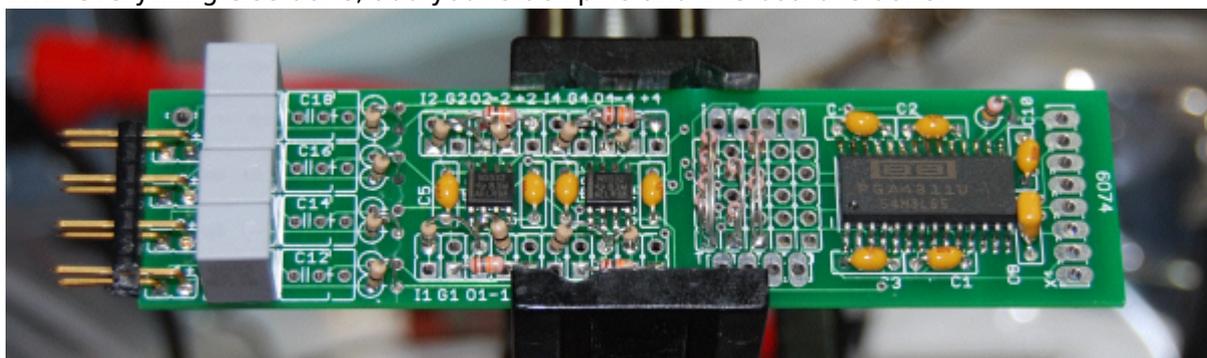
So we have signals buffered and routed into the PGA chip. The four PGA outputs must now be connected to whatever output busses they mix into. Each will need a 10K resistor to ground, and a 10K resistor into buss A,B,C, or D. The board is arranged for SIP resistors, but regular 10K resistors can be used as well. This section of the channel board looks like this:



The square pads at the bottom of each group are, from left to right, Ground, Mix A, Mix B, Mix C and Mix D. So we add a 10K SIP resistor, or 4 separate resistors, from the square pad marked “T” to each of the four holes above it. Now all four outputs are terminated. Then we add a 10K resistor from each of the outputs to whichever buss it mixes into. For a line mixer, the square A pad needs a resistor to output 1 and a resistor to output 3, and square pad B needs 10K resistors to Outputs 2 and 4. If this is a “full” mixer with effects loops, we use 10K resistors to connect A with 1, B with 2, C with 3 and D with 4.

Finally, we are ready to mount the PGA chip. It also gets five 0.1uf capacitors and one 1.0uf cap. C1 to C4 are all 0.1uf. C9 and C10 are 0.1uf and 1.0uf. It doesn't matter which is which.

With everything else done, add your stack pins and this board is done!



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