

# slightly ADVANCED MIXER circuits

This file contains 6 mixer related circuits to take you beyond the basic mixing presented in SIMP\_MIX.

Circuit 1 is a universal preamp. It can be split into two parts. The transformerless balanced input stage and the gain stage. The Balanced stage can be omitted for totally non-balanced designs. Bipolar input capacitors can be added to the balanced stage if required. Especially where phantom power might be used. The second stage gives a variable gain from 1 to 100 times. This is used as the input pre-amp to a mixer strip.

Circuit 2 shows a basic transformerless 5 band EQ using gyrators (Active electronically simulated inductors) The output of this EQ is in phase with the input.

Circuit 3 shows a Transformerless balanced output stage. This can be generally added to the output of any audio device that requires a balanced output. it is generally more accurate and a whole lot cheaper than using a balance transformer.

Circuit 4 is a 3 band EQ with parametric midrange. Bass cut/boost, Mid cut/boost, Mid frequency and Treble cut/boost. Note it does not have a "Q" control on the midrange but is a hell of a lot more quiet than using an actual state variable filter for this stage. This is probably the most standard EQ arrangement on mixers. The circuit can be seen as two halves. First a standard baxandall bass/treble network followed by a variation on the baxandall network to include a variable frequency. The two may be separated if desired. Note however that since both stages invert the phase, if separated the phase will be inverted with respect to the input. However used as is the phase will be maintained.

Circuit 5 is a three band EQ without shelf. This is probably the limit for a single standard baxandall tone stage. The output is out of phase with the input. Further inversion either before or after this stage is required to maintain phase.

Circuit 6 is a U-bute, all singing, all dancing 3 band parametric stage based on the variable shelf mid range scheme above. In fact it's just 3 of the above variable shelf units set to cover three different frequency ranges. Using this circuit requires a lot of knobs. Note also that the output is 180 degrees out of phase with the input since all three stages invert the phase. Further phase reversal is necessary either prior to or after this EQ.

