Audio Modular MIXER with 6 and up input Channel

A lot of friends ask me a circuit AUDIO MIXER, for various uses. I will begin with a circuit which you can it manufacture, as you want. This you can place in the MODULES of inputs any circuit you want, depending on the use that you intend the MIXER, the same is also for the number of input channels, that you will manufacture. Below I will give enough circuits with various levels of quality and complexity. All the circuits that propose and are simple also they maintain, a very good level of quality. For those who they are interested they can make few patience. Shortly I will give project, professional level console of mix signals of sound.

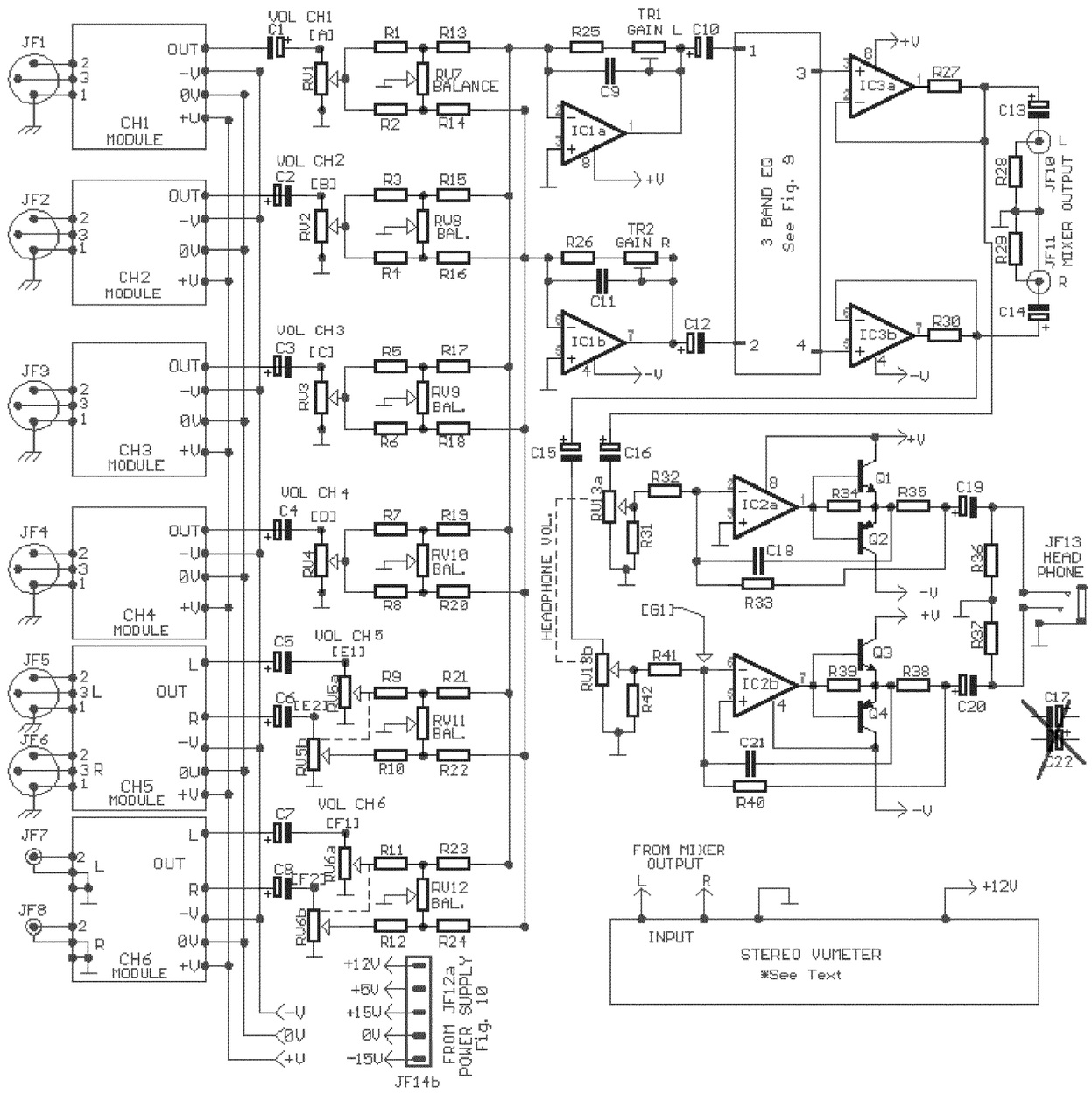


Fig. 1- AUDIO MIXER with 6 and up INPUT CHANNEL by Sam 1/02

In the Fig. 1 exist the main circuit of MIXER-6Ch. It is constituted by 6 input channels. The channels from CH 1-4 are monophonic channels. The circuit that you will select for this place, can be in input connection, BALANCE or UNBALANCE [Symmetrical or asymmetrical], have POWER PHANTOM, for Electret microphones, use various types plugs of input. The channels CH 5-6, are intended for stereo use. The number of input channels they can increase itself as long you want, making choice between mono and stereo of circuits. More details for the input circuits I will give separately for each circuit. The output of each channel drive the RV1-6, that potesometer regulation level of sound. With RV7-12 we create conditions of balance between two channels [panoramic potesometer [BALANCE]]. All the signals from the input channels in this point are added by two adders [IC1a-b], for each channel Here exist two trimmer TR1-2 that adjust the gain of each IC, adapting the level of signal of output, in the level that we want. They can be suppressed if you do not need such something. The next stage is a EQUALIZER [Fig. 9], three band of regulation. The IC3a-b, constitute the output of MIXER, they are have gain one and they make the essential isolation of previous stages, with the unit that we will drive. For whoever they want they use headphones, it exist a classic circuit drive of headphones, round the IC2a-b, that give output in the JF13. It can also exist also optical clue of audio level, with a STEREO VUMETER. Circuit that you can select between what I give in the category of VU Meters or that other you want. The supply of various circuits becomes from the power supply that connect to JF12b and gives a variety from voltages, that probably will need. .

- **VU Meter collection** [1][2][3]

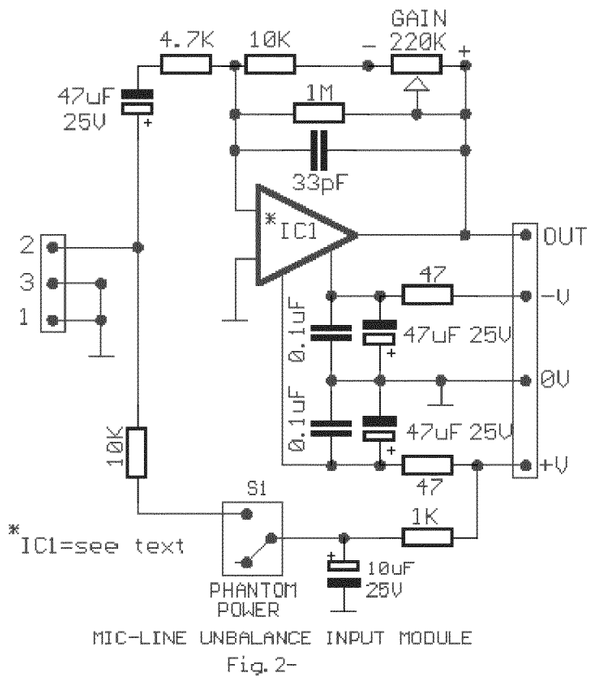
Part List [Fig.1]

R1.....12=4.7Kohms
R13.....24=10Kohms
R25-26=22Kohms
R27-30-34-39=100ohms
R28-29-36-37=100Kohms
R31-42=10Kohms
R32-41=4.7Kohms
R33-40=10Kohms
R35-38=47ohms
All the Resistors is 1/4W 1% metal film

RV1....4=47Kohms Log. [Fader]
RV5-6-13=2X47Kohms Log. [Fader]
RV7....12=10Kohms Lin. pot. Log.
TR1-2=4.7Kohms trimmer
C1....8=10uF 25V
C9-11=47pF ceramic or mylar
C10-12=47uF 25V
C13-14=100uF 25V
C15-16=2.2uF 16V [C17-22=No use]
C18-21=100pF ceramic or mylar

C19-20=220uF 25V
Q1-3=**BD139**
Q2-4=**BD140**
IC1-3=**NE5532**
IC2=**NE5532** - **TL072**
JF1....6=XLR Female Plug
JF7....11= RCA Female Plug
JF13=JACK Female Plug

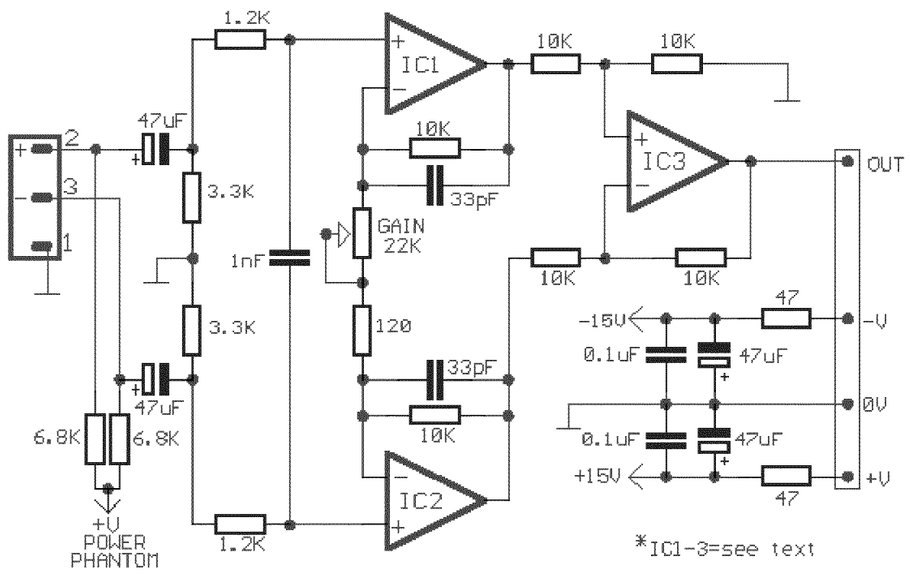
Modules for mono Input Channels



MIC-LINE UNBALANCE INPUT MODULE
Fig. 2-

A simple choice appear in the Fig. 2, in asymmetrical [unbalance] connection of input. It uses integrated circuit [IC1], in inverting and possibility of regulation gain of unit, for low levels [microphone] up to high [line]. With switch S1 we can, if it is necessary we give supply for the operation of Electret, condenset microphones. In the place of IC1 we can use a variety from integrated circuit that give below. The type of integrated circuit that we will use, depend from the number of input channels, that we will manufacture, for this reason I do not give also concrete type. My own choice is: IC1=**NE5534** - **NE5532** - **LM833**- **TL072**- **TL074**.

Electronic Balance Mic-Line input Module



ELECTRONIC BALANCE MIC-LINE INPUT MODULE by Sam 1/02

Fig. 3

In the Fig. 3, appears one stage with much better characteristics, in symmetric connection [balance], with continuous regulation of stage from the potesometer 22KΩ. This give the possibility for regulation of sensitivity, from low input levels until high. And in this circuit I do not give concrete type for the IC1-3. The choice can become from the below list, according to the characteristics the each IC and proportionally use for which him we intend. My own choices are: IC1-2=NE5532 - LM833, IC3=**NE5534** - TL071.

Microphone transistors preamplifiers

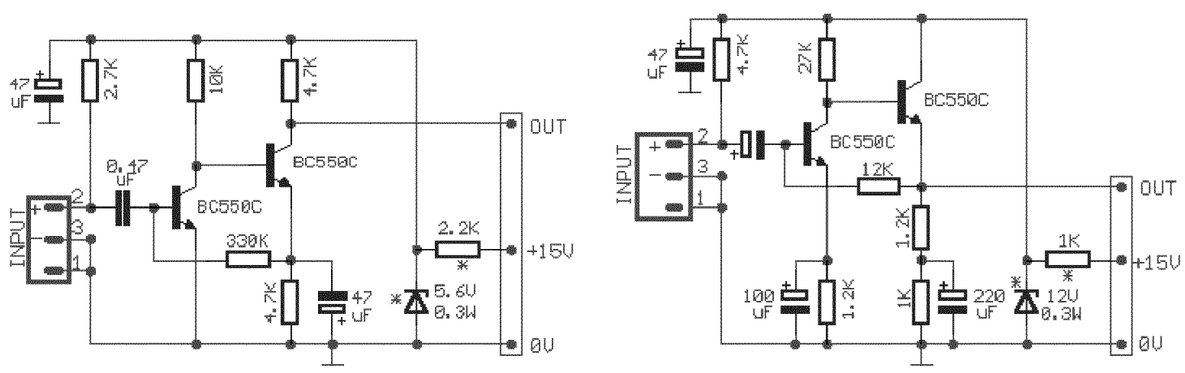


Fig. 4 Fig. 5

UNBALANCE INPUT MIC PREAMPLIFIER MODULE WITH TRANSISTOR by Sam 1/02

In the Fig. 4-5, exist two choices for preamplifiers of microphone that use transistor, in asymmetrical [unbalance] of input connection. For the supply of this stages, exist two choices. The first choice, are with diode zener, the other choice, use voltages that give the regulators, from main power supply..

- **Mic/Line Balance input Professional**

Modules for Stereo Input Channels

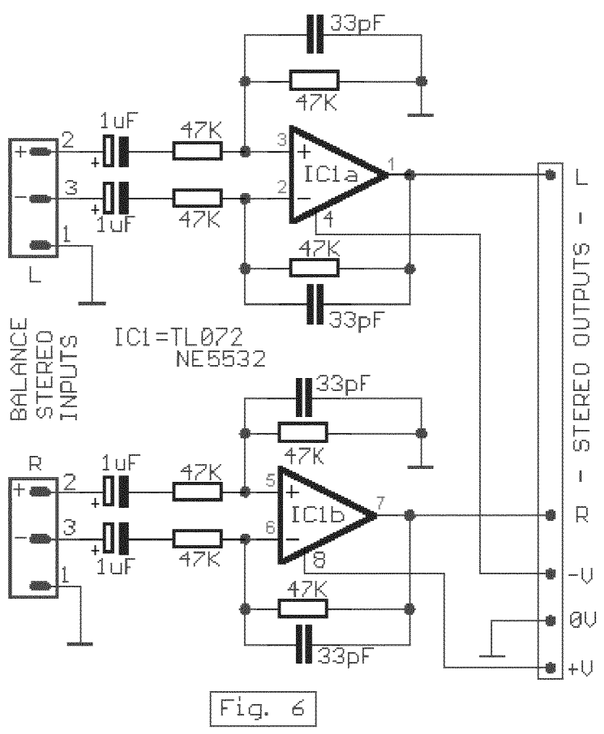


Fig. 6

LINE INPUT BALANCE [STEREO]

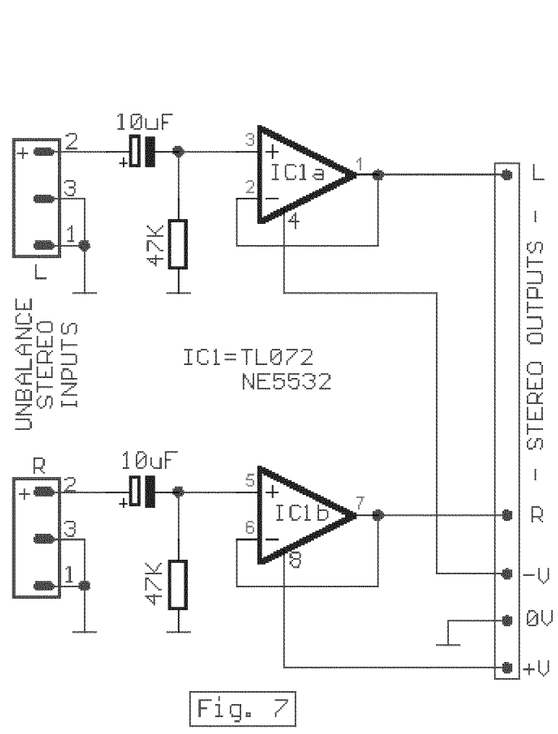
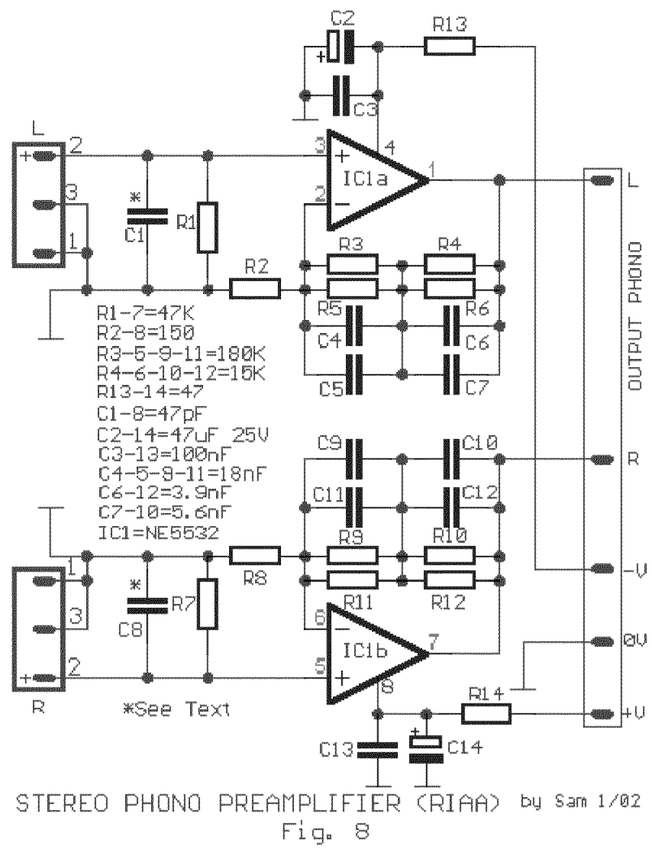


Fig. 7

LINE INPUT UNBALANCE [STEREO] by Sam 1/02

For the modules of inputs stereo, exist two choices, that appear in the Fig. 6-7. The first choice in Fig. 6, it is in symmetric input connection [balance], while in the Fig. 7, exist one of simple asymmetrical input connection [unbalance]. The gain of also two units is one. This gain can increase itself, if this need, if we increase the price of resistors that is parallel with the capacitors 33pF. Should these resistors be equal between them.

Stereo Phono Preamplifier [RIAA Filter]



STEREO PHONO PREAMPLIFIER (RIAA) by Sam 1/02

Fig. 8

In the Fig. 8, exist a classic preamplifier PHONO of correction RIAA, for those who they insist they use disks of vinyl. For good precision in the reproduction of sound, should the materials that find in the negative feedback and correct RIAA, to be good quality, as resistors of 1% metal film, the capacitors polypropylene and Mylar. The capacitor C8, adaptation in the input, can change with such price, so that it suits with the characteristics of cartridge that we will use. In the place of IC1 we can use also the LM833 or other completed low noise integrated circuit.

3 Band EQ

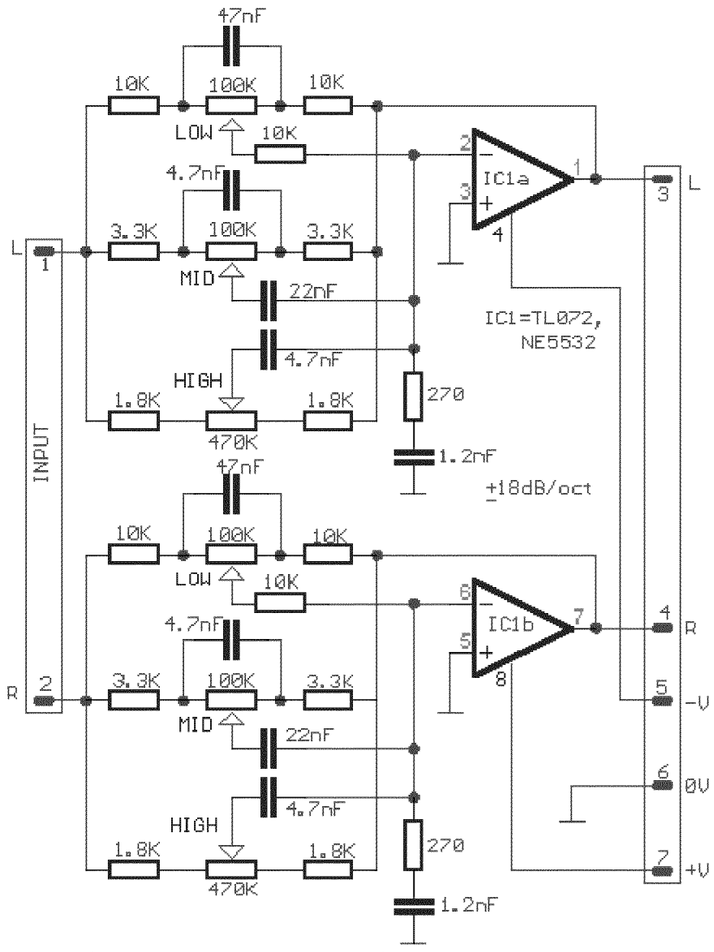


Fig. 9- 3 Band Graphic EQ. by Sam 1/02

In the Fig. 9, exist a simple and classic circuit EQUALIZER, three band, low, mid and high frequencies, with gain of regulation [±18 dB/oct]. All potesometer they are doubly linear and good quality.

Power Supply for 6 Ch MIXER

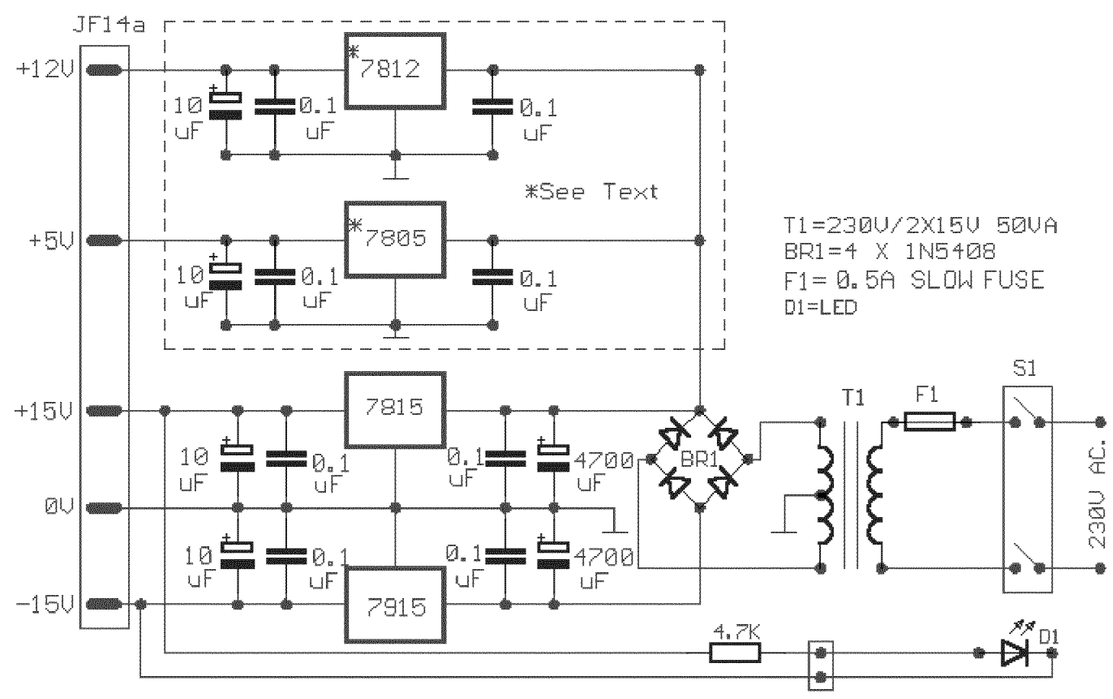


Fig. 10- POWER SUPPLY FOR 6 and up MODULE MIXER by Sam 1/02

The Power supply in fig. 10, he is very simple in his designing. There are four regulators that for us provide a variety from voltages, that probably we will need. The basic voltage are ± 15V. The voltage of + 12V is intended basically for the circuit of VUMETER. If we do not use electronic VUMETER, we can him suppress. The himself is also in effect for the voltage of + 5V, (is intended for the input circuits, with transistor [Fig. 4-5], if we do not use the zener diodes). For until 6 input channels the regulators, it does not need they are placed in heatsinks . For more channels good it will be they are placed on heatsinks. Is good transformer T1, it is placed far by the remainder circuits.

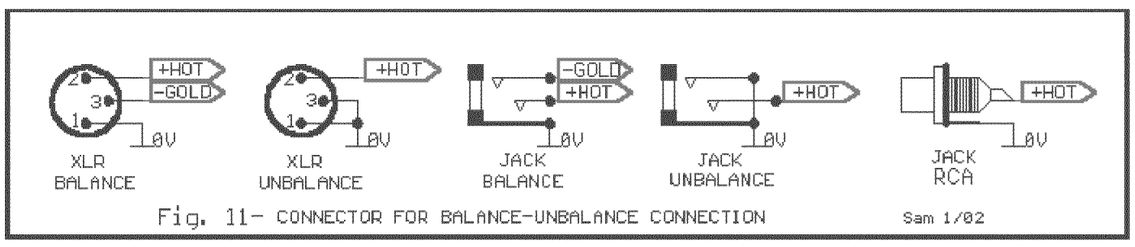
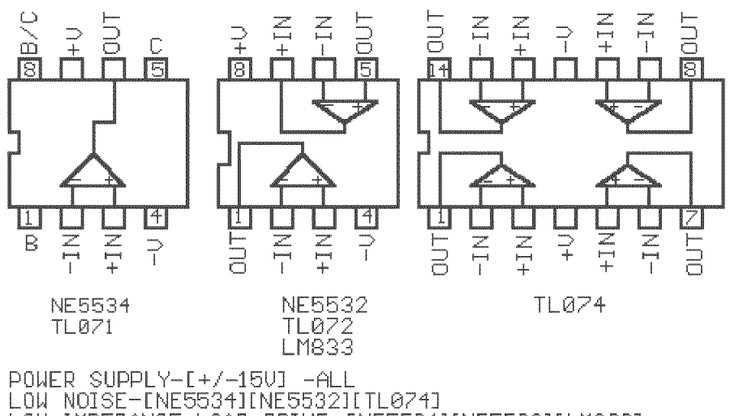


Fig. 11- CONNECTOR FOR BALANCE-UNBALANCE CONNECTION Sam 1/02

In the Fig. 11, appear various choices of connection for various types of plugs, that you can use in all the input circuits. Attention should be given in the connections, so that are not created bronchuses, so that we have hum. The clue [+ HOT] correspond in signals inside phase, while clue [- GOLD] in out phase signals. All the components should be good quality. .

Typical characteristics for IC's, that I propose



POWER SUPPLY-[+/-15V] -ALL
LOW NOISE-[NE5534][NE5532][TL074]
LOW IMPEDANCE LOAD DRIVE-[NE5534][NE5532][LM833]
High Input Impedance -[TL072][TL074]
High Slew Rate-[NE5534][NE5532][TL072][TL074]
Low Harmonic Distortion- ALL

Fig. 12

The MIXER-6Ch, can be manufactured in a box, which the above surface will have a certain bent. In the place RV1-6, can be used potesometer Fader. So if you cannot accomplish with this manufacture, you can use simply rotatively potesometer in all the places.

* If you use **NE5534**, it should you place capacitor 22pF between pin 5 and 8 .

Pre Fader Listen [PFL] stage for Audio Mixer

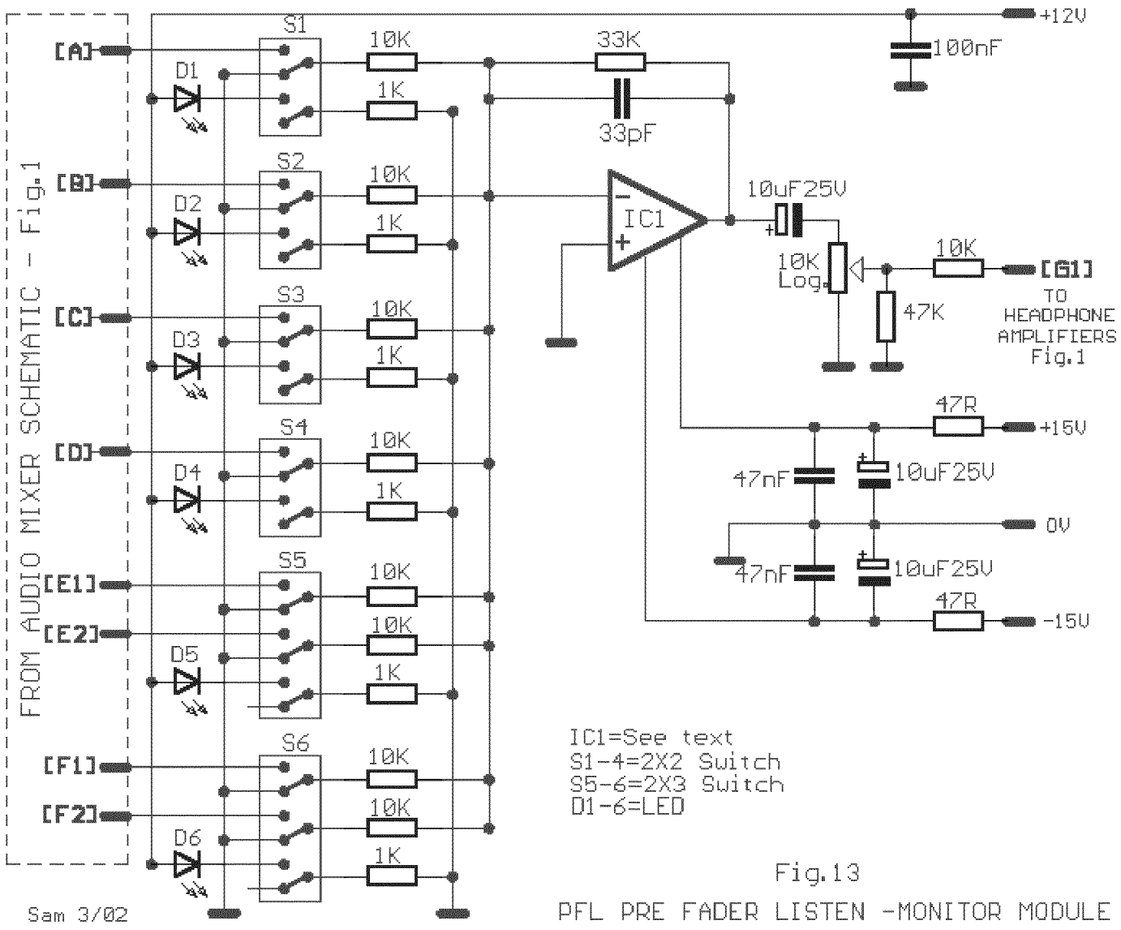


Fig.13
PFL PRE FADER LISTEN -MONITOR MODULE

Monitor Sel. From Mixer Input Channel To Headphone

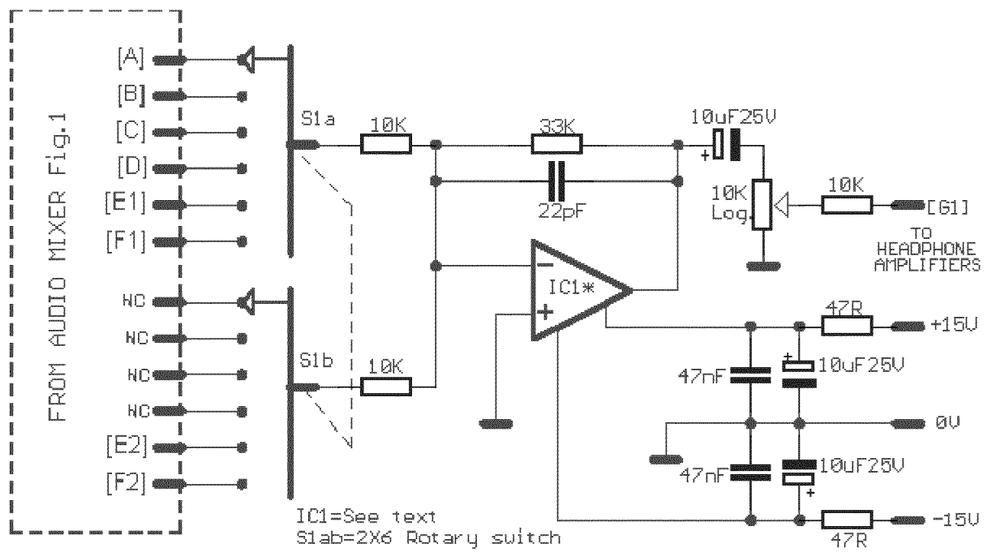


Fig.14- MONITOR SEL. FROM MIXER INPUT CH. TO HEADPHONE Sam 3/02

Many friends asked if it□s possible in the MIXER exist also a circuit monitor, so that is possible the pre-listen channels without they are open pot. Fader or they can hear that it exist in the each input channel, parallel with the sound that goes to the main output, without exist his effect of one in the other. This work him they make the circuits that I give. In the Fig.13, exist a circuit that this listen becomes from independent switches, with possibility of listen all channels, we want. Parallel, exist also diodes LED D1-6, that shows more channel is open. Then exist a classic summing amplifier and a potesometer that regulates level to headphone amplifier. This signal is charged with the mainly signal, but only in a headphone amplifier. If the circuit became complexer, we could cut the signal from exit L-R, when we pressed some switch. In the Fig.14, exist a circuit that make the same work, but is simpler. Instead of switches, exists a double rotary switch, that select only a input channel each time. In the place of IC1, it can enter somebody from opamp. that propose, choice of that will be proportional units that will be used.

- **Audio MIXER 6CH in Greek**