Preamps for home hi-fi and musical instruments
Schematics and Bill of Materials for audio preamplifiers projects

This project made for testing and building the best simple solutions for instrument and audio preamplifiers for home users. Microphone preamp with cheap instrument amplifier INA217, noiseless solution with jFET for guitarists, and very simple but hi-gained audio circuits with OpAmps for audio solutions for home hi-fi. The next project is to make audio mixer with these preamplifier circuits.

Read details, updates, advices on the page of schematics and notes. PCB-s and more notes, pictures, advices about this project are available on the author’s blog and websites:

English blog and PCB order: [http://custompcb.blogspot.com/](http://custompcb.blogspot.com/)
Hungarian blog and PCB order: [http://diyguitarpa.blogspot.com/](http://diyguitarpa.blogspot.com/)
The Youtube Channel • Picasa gallery • Email: gitarfogas@gmail.com

Schematics and Bill of Materials for audio preamplifiers projects

Schematic and BOM of cheap microphone preamp
Stereo [FET] guitar [instrument, effect] preamp
Stereo dual OpAmp instrument or audio preamplifier
Stereo circuit with 2 single OpAmp, instrument and audio preamplifier
Stereo low noise 2 single OpAmp instrument preamplifier
Schematic and BOM of power supply

Printed Circuit Boards for instrument preamps project
Top and bottom PCBs and overlay of INA217 microphone preamp
Top and bottom PCBs and overlay of stereo jFET preamp
Top and bottom PCBs and overlay of simple dual OpAmp preamp
Top and bottom PCBs and overlay of power filters (ver.3)
Top and bottom PCBs and overlay of power filters (ver.2)
Top and bottom PCBs and overlay of power filters (ver.1)
Two single OpAmp - stereo universal preamp
Two single OpAmp - stereo low noise universal preamp
Switch module for preamps
The PCB of power supply

Images and Picasa galleries about the prototype of preamps
The selectable prototype of [FET] and OpAmp projects
Audio mixer with [FET] and OpAmp preamps
Microphone preamp with INA217

The Picasa album about prototype testing

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potentiometer</td>
<td>47kB</td>
<td>Mono 47 kΩ ±5% potentiometer (2 pin, 2 mil)</td>
</tr>
<tr>
<td>Resistor</td>
<td>10uF</td>
<td>10 mF ±5% axial Electrolytic Capacitor (2 leads)</td>
</tr>
<tr>
<td>Resistor</td>
<td>47K</td>
<td>47 kΩ ±5% SMD Axial Resistor (2 leads)</td>
</tr>
<tr>
<td>Resistor</td>
<td>1K</td>
<td>1 kΩ ±5% SMD Axial Resistor (2 leads)</td>
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<tr>
<td>Resistor</td>
<td>6.8K</td>
<td>6.8 kΩ ±5% SMD Axial Resistor (2 leads)</td>
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<tr>
<td>Resistor</td>
<td>2.2K</td>
<td>2.2 kΩ ±5% Axial Resistor (2 leads)</td>
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<tr>
<td>Resistor</td>
<td>470</td>
<td>470 Ω ±5% SMD Axial Resistor (2 leads)</td>
</tr>
<tr>
<td>Diode</td>
<td>1N4148</td>
<td>1N4148 Diode DO-35 (plastic encapsulated, 4 leads)</td>
</tr>
<tr>
<td>Diode</td>
<td>1N4148</td>
<td>1N4148 Diode DO-35 (plastic encapsulated, 4 leads)</td>
</tr>
<tr>
<td>Transistor</td>
<td>BC548C</td>
<td>BC548C (plastic encapsulated, 7 leads)</td>
</tr>
<tr>
<td>Transistor</td>
<td>BC560C</td>
<td>BC560C (plastic encapsulated, 7 leads)</td>
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<tr>
<td>Operational Amplifier</td>
<td>OP177</td>
<td>OP177 (1006, plastic DIP, 8 leads)</td>
</tr>
<tr>
<td>Amplifier</td>
<td>INA217</td>
<td>INA217 (1007, plastic DIP, 8 leads)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>±15V</td>
<td>±15V AXIAL-0.4 (±15V 20mA)</td>
</tr>
</tbody>
</table>

Notes
This circuit made for mono microphone inputs only. The input is mono, jack inserted directly to the board with asymmetrical/symmetrical converter, and 3 inputs header inserted for symmetrical phones with XLR output. Switch module required to select between two inputs (asymmetrical jack or symmetrical XLR). The amplifier of this circuit is INA217. This instrument amp is very cheap, and noiseless. Volume and gain potentiometers included.
Schematics and Bill of materials for instrument preamplifiers

Stereo jFET guitar (instrument, effect) preamp

![Image of the schematic diagram for a stereo jFET guitar preamp]

**Notes**

This very simple, small, cheap and noiseless preamp made for musical instruments with stereo (or mono) input. The main part of this circuit is 2N3958 dual JFET. Ideal for stereo or mono guitar effects, keyboards, or to connect another devices with stereo outputs like audio mixers. Stereo jack, gain and volume adjustable resistors are inserted to the PCB. Very cheap and very good quality for guitars. The possible gain is not too high of this circuit, but enough for guitars and guitar effects with very warm sound.

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Schematics and Bill of materials for instrument preamplifiers

Stereo dual OpAmp instrument or audio preamplifier

![Image of the schematic diagram for a stereo dual OpAmp preamp]

**Notes**

This is another really simple, good quality and cheap preamplifier with stereo jack input for guitar effects or keyboards. The possible gain is much higher than JFET circuit, and the sound is better for keyboards or mixers than the guitars or guitar effects. The dual OpAmp must be compatible with TL072. Gain and volume pots has inserted to the PCB board.
Schematics and Bill of materials for instrument preamplifiers

Stereo circuit with 2 single OpAmp, instrument and audio preamplifier

Notes

This circuit looks like the previous version of TL072 compatible OpAmp preamplifier, but for this, two single OpAmp device required, instead of one dual. The reason of this solution is the better quality, if you want to use for example really noiseless single LF or LT serial integrated circuits instead of relative noisy one dual TL072.

This solution is really cheap, against the noise one power-filter circuit included (for both OpAmps). Stereo jack input, stereo/mono and bypass switch, gain and volume potentiometers inserted to the board.

Because the circuit noise, distortion (and the gain) depending on the included single OpAmp, the solution recommended for all non-guitar instrument, and audio amplifiers for home hi-fi solutions.

Schematics and Bill of materials for instrument preamplifiers

Stereo low noise 2 single OpAmp instrument preamplifier

Notes

This circuit looks like the previous version of TL072 compatible OpAmp preamplifier, but for this, two single OpAmp device required, instead of one dual. LT1115 or LT1028 recommended for best result, maybe one of LF or NE serial OpAmps.

The difference between this and the previous version of board, here we have two power filter, one filter for one OpAmp for the best result of really low noise and distortion. The circuit recommended for home hi-fi and instruments, included instrument effects.

Gain and volume potentiometers, bypass and stereo/mono switches included to the board with stereo jack input.
Schematics and Bill of materials for instrument preamplifiers

Schematic and BOM of power supply

Notes

This is the power supply. Very simple and good quality low power circuit. Two adjustable regulators can be fixed to the heatsink. The adjustable regulator with Zener diode have cleaner output than simple 7815 and 7915 regulators.
PCB for the instrument preamps
Top and bottom PCBs and overlay of INA217 microphone preamp
PCB for the instrument preamps
Top and bottom PCBs and overlay of stereo jFET preamp

PCB for the instrument preamps
Top and bottom PCBs and overlay of simple dual OpAmp preamp
**Notes**

We have 3 versions of power filter PCB. No difference between schematics, the one of them is landscape, the another 2 is portrait.

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PCB for the instrument or hi-fi preamps
Two single OpAmp - stereo low noise universal preamp

PCB for the instrument or hi-fi preamps
Switch module for preamps

http://diyguitarpa.blogspot.com/
http://custompcb.blogspot.com/
Preamplifiers for musical instruments and home hi-fi

PCB for the instrument or hi-fi preamps
The PCB of power supply
Images and Picasa galleries about the prototype of preamps
Images about the prototypes of this preamp project
Audio mixer with jFET and OpAmp preamps

The Picasa gallery about this circuit

Images about the prototypes of this preamp project
Microphone preamp with INA217

The Picasa galleries about this circuit:
• Planning and collecting parts
• Images about the prototype
• Testing the INA217 board
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