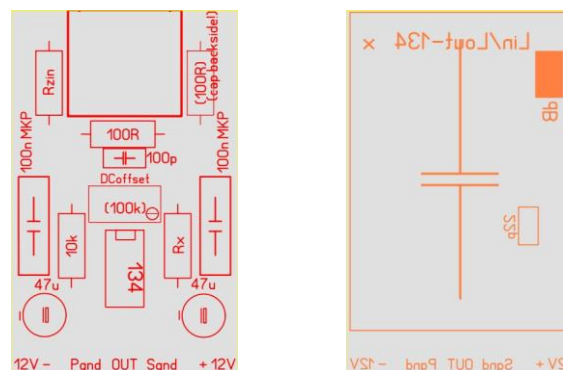


## Lin/Lout-134x input module

With this module we provide a tiny line buffer circuitry, which is fed by an RCA line signal. This buffering provides low impedance of the internal wiring, way less sensitive to hum and noise. Besides that, the source always “sees” a constant load impedance. Buffer your input signal before processing it as it always should be done !

With the Burrows Brown OPA134 **audiophile** opamp you obtain one of the best buffer circuits available today. Actually, this circuit basically comes right from the schoolbooks. With this, the load as well as the following circuit always “sees” a constant impedance.



True scale, front and back side.

### Lin/Lout-134x layout

The tiny, 30x48mm PCB contains all the parts required and a quality RCA chassis connector.

From top to bottom:

- Gold plated RCA (RJ140G) chassis connector (input)
- Input RF filtering parts and (optional) offset trim potmeter
- [Burr Brown OPA134](#) opamp and MKP decoupling parts
- Power Supply capacitors
- Line output connections
- At the backside a large (max. 36mm) input capacitor could fit

Since this PCB hardly has any weight, mounting the connector to the cabinet chassis is sufficient.

### It makes Sense? YES !

Why should one use a line to line circuit like this, when the line signal is available already?

With an input impedance of near infinite (true FET input stage), the input impedance of our Lin/Lout-134x won't affect the characteristics of the preceding equipment and interlink cable at all.

On the other hand: the output impedance at the internal connected electronics normally influences the behaviour of the previous equipment and interlink cable. This change in impedance, inductance and/or capacitance could affect the performance of the following circuits in a noticeable way.

With our ELTIM Lin/Lout-134x, these problems are solved, since the input impedance is about infinite and the output impedance a constant at an extremely low 0,01 ohms, meaning that about any circuit or cable can be used, even very long ones. You don't need to border about the output impedance of the preceding unit either.

## Mounting

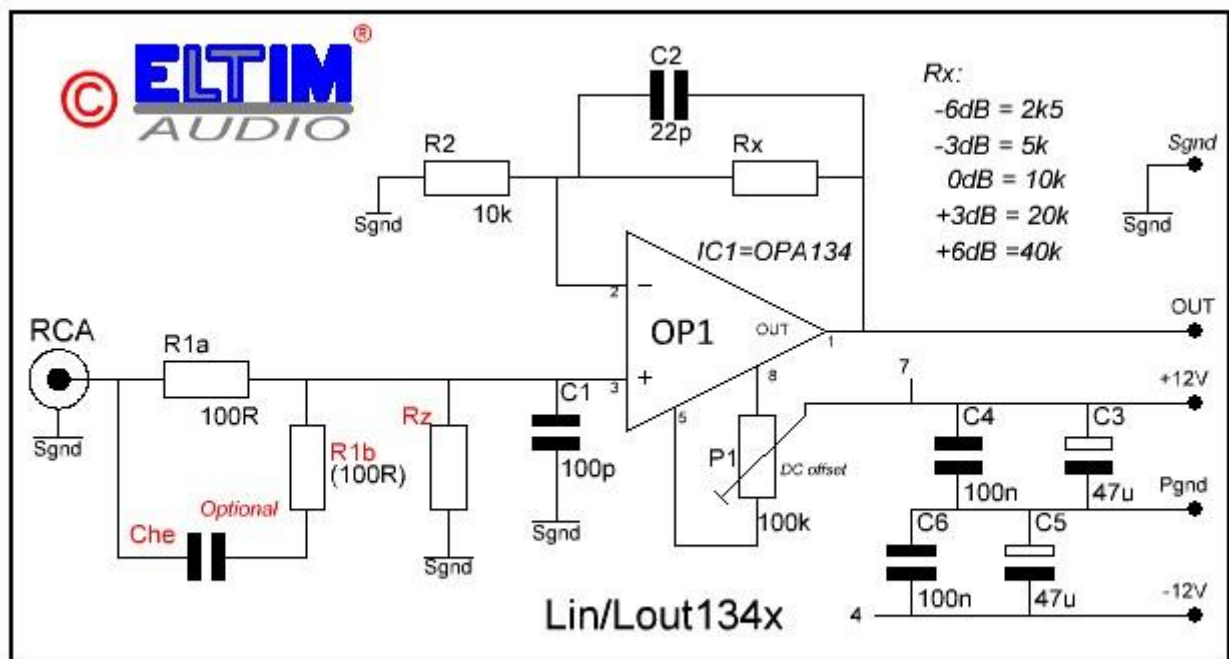
The RCA connector fits in a hole of  $\varnothing$  12mm, fitted with a single external nut.  
Since the module has about no weight, further mounting steps are not required.

## Power supply

The **Lin/Lout-134x** PCB's requires a symmetrical supply voltage of +/- 4 to 18 Volts (<7mA).  
We marked the supply lines as -12V, Pgnd and +12V. Pgnd is the back side ground plane.  
Note that we separated the signal ground, being the top ground plane of the PCB. In most cases both grounds can / have to be connected in order to make it work. In some cases, f.e. where a shielded wire is used, it is better to connect the Sgnd (= wire shielding) to ground at the following circuit instead of connecting it to Pgnd at this module. Less/no hum/noise.

## Circuit

On this Lin/Lout-134x modules we provide the most commonly used Opamp layout as in the picture below, where a RCA Line input signal is buffered by a very high quality Opamp to a single line, internal signal:



*A large input capacitor can be mounted at backside. Then remove R1a and mount R1b*

The only thing added are 100nF MKP and 47uF electrolytic capacitors over the power rails.

R2/Rx define the gain setting. If equal, gain is 0dB. Other gain setting available on request.

A precision Opamp like this [OPA134](#) performs outstanding in an High-End audio environment as is proven for some years already. Fortunately it lacks the typical, narrow "opamp sound" we hear too often today. It shows minimal output DC-offset as standard already. With an **optional** 25 turn, 100k trim potmeter one could trim the DC-output to exactly 0,000 Vdc.

Due to the symmetrical supply voltage the input is at dc-ground level, so you can leave out an input capacitor. Unfortunately lots of equipment give a dc-output on their signal. In that case an input capacitor is required. You could mount a significant quality and size (up to 36mm) at the back side. While doing so, remove R1a and mount R1b and all is connected in the correct way.  
NO input capacitor is the BEST capacitor, since it only has the function of blocking a DC signal!

If you want a defined input impedance, just solder a resistor in the position Rzin. The value of it defines the input impedance of this circuit. Solder tabs for this resistor are on the PCB already, marked as Zin.

### RCA connector

The gold plated (RJ140G) RCA chassis connector for the Line input is mounted on the board and also used for mounting this module.



### Models

We provide versions with different amplification values:

0dB (mostly 1V), -3dB (2 Volt line signal) and -6dB (4 Volt line signal).

Normally we supply the 0dB variant, -3/-6dB on request where higher than normal internal signal levels are used. Just change the values of R2 and R3, that's all.

- Lin/Lout-1346- Balanced in/Line out with -6dB gain
- Lin/Lout-1343- Balanced in/Line out with -3dB gain
- Lin/Lout-1340 Balanced in/Line out with 0dB gain
- Lin/Lout-1343+ Balanced in/Line out with +3dB gain
- Lin/Lout-1346+ Balanced in/Line out with +6dB gain

On request we can also provide models with any other gain setting.

Normally we mount 47k for R<sub>zin</sub>, other input impedances on request.

### Some figures

Input impedance:	near infinite ( $10^{13}$ ohms / 105pF), defined by R <sub>zin</sub>
Frequency range:	> 8,0MHz.
Output voltage max.	V power Supply -2,5V
Slew rate:	> 20V/uS
Distortion:	< 0,00008% THD
Noise figure:	< 104dBu
CMRR:	> 90dB @60Hz under all circumstances
Power Supply voltage:	+/- 4 to 18V
Power Supply current:	5mA
Dimensions	48x30x27mm (LxWxH)

The circuit is able to withstand a shortcut of the output (40mA).

### ELTIM audio, Europe's largest DIY website

This Burrows Brown (now Texas Instruments) OPA134 and other very interesting, rare, audiophile chips, transistors and passive components are available as well in [our webshop](#). We provide f.e. [EXICON](#) Mosfets (specifically designed for the highest quality analog amplifiers), [THAT](#) audiophile [analog \(!\) IC's](#), [MUNDORF power supply capacitors](#), crossover [capacitors](#) and [coils](#), a huge base of [drive units](#), [PURESONIC](#) connectors, and many more nice stuff..... -)

If you have questions or comments on this project, [let us know](#)!

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