

# KIT 17. LM386 LOW VOLTAGE AUDIO AMPLIFIER MODULE

This is an amplifier module using the LM386N-1 from National Semiconductor. The LM386N-1 is a power amplifier designed for use in low voltage consumer applications. The gain is internally set to 20 to keep external part count low, but the addition of an external resistor and capacitor between pins 1 and 8 will increase the gain to any value up to 200.

The inputs are ground referenced while the output is automatically biased to one half the supply voltage. The quiescent power drain is only 24 milliwatts when operating from a 6 volt supply, making the LM386N-1 ideal for battery operation.

## ASSEMBLY INSTRUCTIONS

Make sure to get the integrated circuits and the capacitors around the correct way. The electrolytic & tantalum (if supplied) capacitors are polarized: the longer of the two leads is positive, the shorter, negative.

## CIRCUIT DESCRIPTION

The wide operating voltage 4V to 12V and the low current drain make the module ideal for battery operation. If no jumper is connected, that is, pins 1 and 8 are unconnected, then the gain of the module is (internally) set to 20. If you add the jumper then the gain is 200. If you use a resistor in place of the jumper then a gain between 20 and 200 is obtained.

Note that for the N-1 version no Zobel network is required between pin 5 and ground on the output. This comes from my Data Book from NS on this IC although it seems to have been taken out from the specification on the website. You may download the LM386N-1 data sheet from the National Semiconductor website at

<http://www.national.com/catalog>

## IF IT DOES NOT WORK

Poor soldering or components in the wrong position or around the wrong way are the most likely reasons.

## COMPONENT LISTING

Capacitors:		
2.2u or 4.7u ecap	C1	1
10uF ecap	C2	1
47uF or 100uF ecap	C4	1
100nF monoblok	C3	1
470uF/16V ecap	C5	1
10K potentiometer - Piher or big potentiometer		1
1K resistor brown black red	R1	1
LM386N-1 IC		1
8 pin IC socket		1
jumper		1
2-pin single in-line header		1
PCB-mounted SPDT switch		1
3mm LED	LED	1
Kit 17 PCB		1

New PCB and documentation using the LM386N-1, june 1999.

See the website of DIY Electronics at

<http://kitsrus.com>

Email me at [peter@kitsrus.com](mailto:peter@kitsrus.com) if you have any problems.

