

Total solder points: 33  
Difficulty level: *beginner* 1  2  3  4  5  *advanced*

## 7W mono amplifier



# *K4001*

*Small but powerful  
multipurpose amplifier.*



## Features:

This small amplifier is constructed around the TDA2003 IC, capable of delivering 4Wrms at 4ohms. The IC is completely thermally and short-circuit protected. A conventional direct current can be connected as supply.

## Specifications :

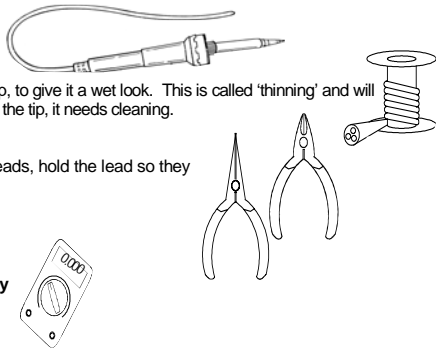
- Music output power : 7W/4ohm
- RMS output power : 3.5W/4ohm or 2W/8ohm
- Total harmonic distortion : 0.05% (1W/1KHz)
- Frequency response : 20Hz-20KHz (-3dB)
- Input sensitivity : 40mV/150Kohm
- Signal/noise ratio : 86dB (A weighted)
- Power supply : 8-18VDC/0.5A
- Dimensions : 55x35mm (2.2" x 1.4")

### 1. Assembly (Skipping this can lead to troubles !)

Ok, so we have your attention. These hints will help you to make this project successful. Read them carefully.

#### 1.1 Make sure you have the right tools:

- A good quality soldering iron (25-40W) with a small tip.
- Wipe it often on a wet sponge or cloth, to keep it clean; then apply solder to the tip, to give it a wet look. This is called 'thinning' and will protect the tip, and enables you to make good connections. When solder rolls off the tip, it needs cleaning.
- Thin raisin-core solder. Do not use any flux or grease.
- A diagonal cutter to trim excess wires. To avoid injury when cutting excess leads, hold the lead so they cannot fly towards the eyes.
- Needle nose pliers, for bending leads, or to hold components in place.
- Small blade and Phillips screwdrivers. A basic range is fine.



**For some projects, a basic multi-meter is required, or might be handy**

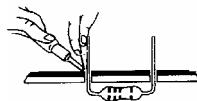
#### 1.2 Assembly Hints :

- ⇒ Make sure the skill level matches your experience, to avoid disappointments.
- ⇒ Follow the instructions carefully. Read and understand the entire step before you perform each operation.
- ⇒ Perform the assembly in the correct order as stated in this manual
- ⇒ Position all parts on the PCB (Printed Circuit Board) as shown on the drawings.
- ⇒ Values on the circuit diagram are subject to changes.
- ⇒ Values in this assembly guide are correct\*
- ⇒ Use the check-boxes to mark your progress.
- ⇒ Please read the included information on safety and customer service

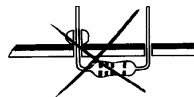
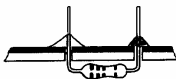
\* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as 'NOTE' on a separate leaflet.

**1.3 Soldering Hints :**

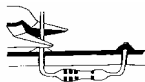
1- Mount the component against the PCB surface and carefully solder the leads



2- Make sure the solder joints are cone-shaped and shiny

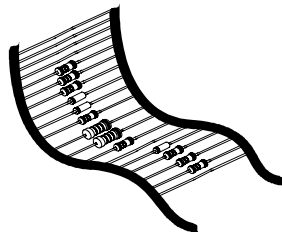


3- Trim excess leads as close as possible to the solder joint

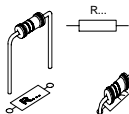


**AXIAL COMPONENTS ARE TAPED IN THE CORRECT MOUNTING SEQUENCE !**

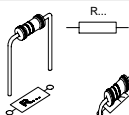
**REMOVE THEM FROM THE TAPE ONE AT A TIME !**



 You will find the colour code for the resistances and the LEDs in the HALG (general manual) and on our website: <http://www.velleman.be/common/service.aspx>

**1. Resistors.**

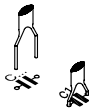
- R1 : 470 (4 - 7 - 1 - B)
- R2 : 4,7 (4 - 7 - B - B)
- R3 : 100 (1 - 0 - 1 - B)

**2. Metal film resistor.**

- R4 : 1 (1 - 0 - B - B - 9)

**3. Capacitors.**

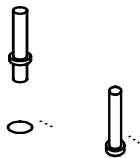
- C1 : 8n2 (822)
- C2 : 100nF (104)
- C3 : 100nF (104)

**4. PCB tabs**

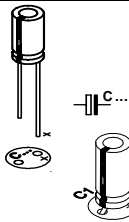
- IN
- GND

- LS
- GND

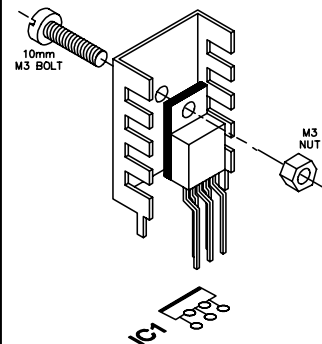
- +V
- GND

**5. Electrolytic Capacitors.  
Watch the polarity !**

- C4 : 10 $\mu$ F
- C5 : 470 $\mu$ F
- C6 : 1000 $\mu$ F
- C7 : 1000 $\mu$ F

**6. IC.**

- IC1 : TDA2003!



## 7. Supply connection

Figure 1 is an example of a suitable mains supply for this circuit. Naturally, you can also use batteries to power the circuit.

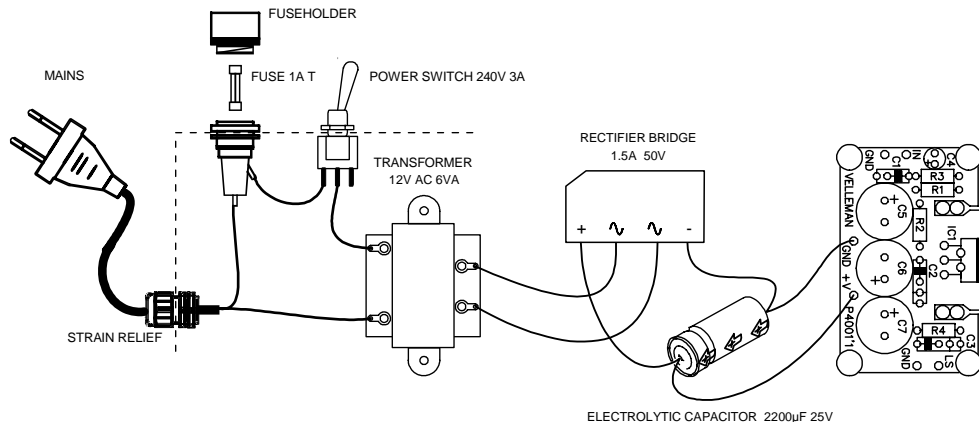


Fig. 1.0

## 8. Volume control

Adjust the volume by connecting a 47K logarithmic potentiometer as indicated in figure 2.0.

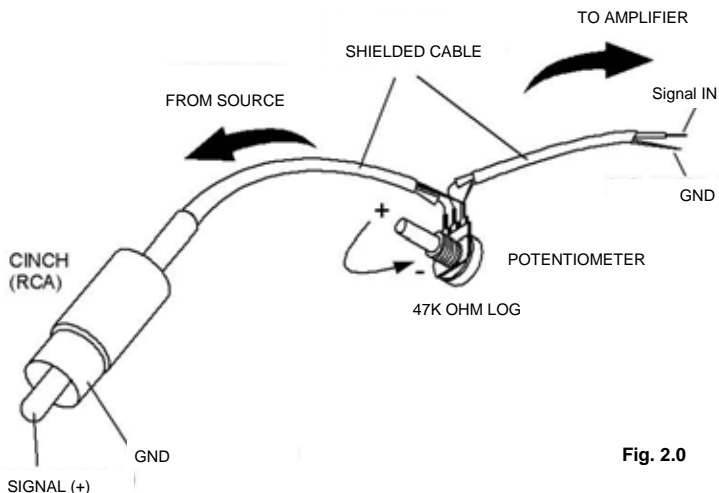


Fig. 2.0



## 9. Connection example

Figure 3.0 is an example of a connection diagram of a 4 or 8 ohm speaker that is connected to the pins LS and GND. The input signal should be connected with the IN and GND pins.

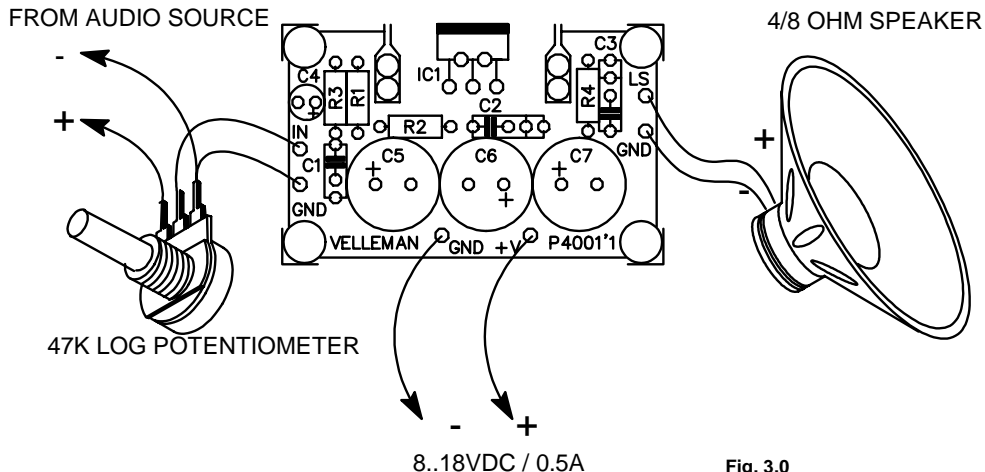
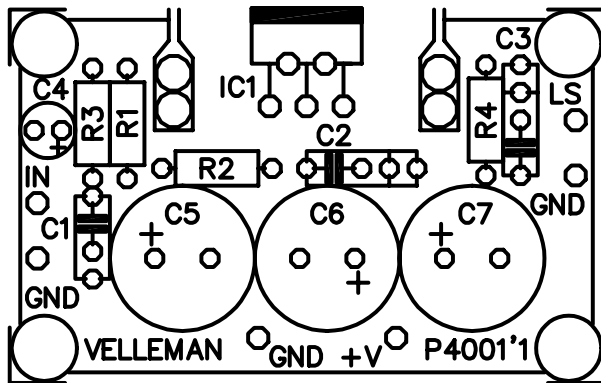
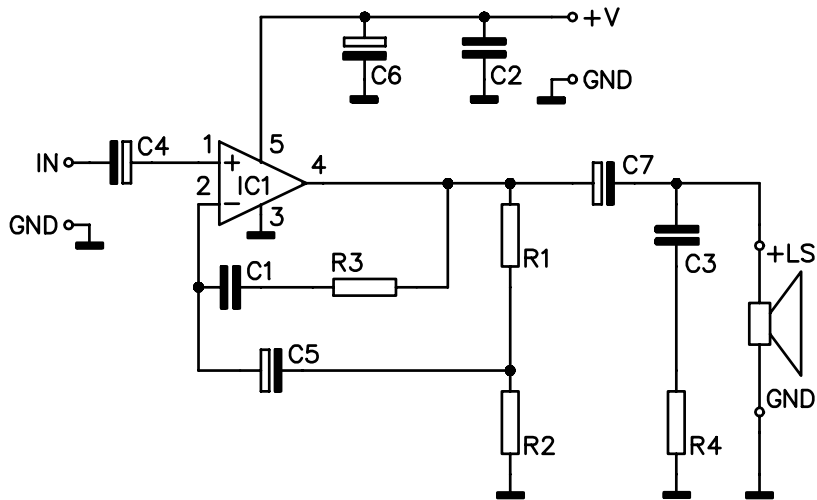


Fig. 3.0

## 10. PCB layout.



## 11. Diagram





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