

Total solder points: 186

Difficulty level:

Beginner 1  2  3  4  5  Advanced

HIGH-Q  
**velleman-kit** 

**K4305**

# 2 x 10 LED STEREO VU METER

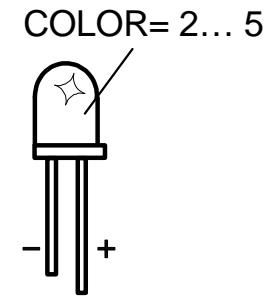
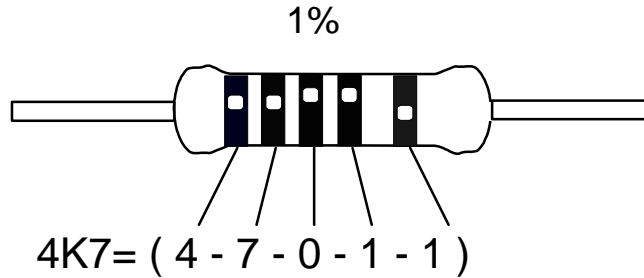
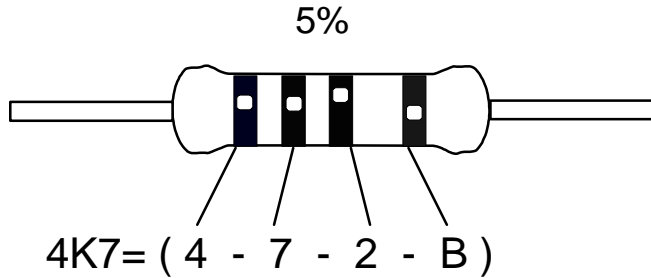
- For instant visualization of audio signal levels.
- Easy hook up to a LINE level ( LOW input) signal source.
- For use with mixing panels, amplifiers, CD players, radio's, ...
- A special input (HIGH INPUT) is provided, which allows direct connection to a SPEAKER\* output .
- DOT or BAR display mode selectable to suit your application.
- Attractive display window supplied, which can be used both horizontal as vertical.
- If wanted, the unit can be calibrated by means of a trim potentiometer.

**\*NOT SUITED FOR CONNECTION TO HIGH POWER CAR STEREO SYSTEM**

## Specifications:

- 2 X 10 LED's
- BAR OR DOT MODE
- INDICATION RANGE: 0dB = 0.775mVrms.  
-20dB, -10dB, -7dB, -5dB, -3dB, -1dB, 0dB, +1dB, +2dB, +3dB
- FREQUENCY RANGE: 20Hz tot 30KHz
- LOW INPUT FOR 0dB: 150mV to 6Vrms (47K)
- HIGH INPUT FOR 0dB: 1.5V to 60Vrms (470K).
- POWER SUPPLY: 10 to 15VDC / 250mA max.
- PCB DIMENSIONS 2X: 68X37mm

modifications reserved



| C<br>O<br>D<br>E | I                        | P                              | E                                | SF                    | S                      | DK                    | N                     | D                    | GB                     | F  | NL                    | C<br>O<br>D<br>E |
|------------------|--------------------------|--------------------------------|----------------------------------|-----------------------|------------------------|-----------------------|-----------------------|----------------------|------------------------|--|-----------------------|------------------|
|                  | <i>CODICE<br/>COLORE</i> | <i>CODIGO<br/>DE<br/>CORES</i> | <i>CODIGO<br/>DE<br/>COLORES</i> | <i>VÄRI<br/>KOODI</i> | <i>FÄRG<br/>SCHEMA</i> | <i>FARVE<br/>KODE</i> | <i>FARGE<br/>KODE</i> | <i>FARB<br/>KODE</i> | <i>COLOUR<br/>CODE</i> | <i>CODIFI-<br/>CATION<br/>DES<br/>COU-<br/>LEURS</i> | <i>KLEUR<br/>KODE</i> |                  |
| 0                | Nero                     | Preto                          | Negro                            | Musta                 | Svart                  | Sort                  | Sort                  | Schwarz              | Black                  | Noir   | Zwart                 | 0                |
| 1                | Marrone                  | Castanho                       | Marrón                           | Ruskea                | Brun                   | Brun                  | Brun                  | Braun                | Brown                  | Brun   | Bruin                 | 1                |
| 2                | Rosso                    | Encarnado                      | Rojo                             | Punainen              | Röd                    | Rød                   | Rød                   | Rot                  | Red                    | Rouge  | Rood                  | 2                |
| 3                | Aranciato                | Laranja                        | Naranjado                        | Oranssi               | Orange                 | Orange                | Orange                | Orange               | Orange                 | Orange   | Oranje                | 3                |
| 4                | Giallo                   | Amarelo                        | Amarillo                         | Keltainen             | Gul                    | Gul                   | Gul                   | Gelb                 | Yellow                 | Jaune  | Geel                  | 4                |
| 5                | Verde                    | Verde                          | Verde                            | Vihreä                | Grön                   | Grøn                  | Grønn                 | Grün                 | Green                  | Vert   | Groen                 | 5                |
| 6                | Blu                      | Azul                           | Azul                             | Sininen               | Blå                    | Blå                   | Blå                   | Blau                 | Blue                   | Blue   | Blauw                 | 6                |
| 7                | Viola                    | Violeta                        | Morado                           | Purppura              | Lila                   | Violet                | Violet                | Violet               | Purple                 | Violet   | Paars                 | 7                |
| 8                | Grigio                   | Cinzeno                        | Gris                             | Harmaa                | Grå                    | Grå                   | Grå                   | Grau                 | Grey                   | Gris   | Grijs                 | 8                |
| 9                | Bianco                   | Branco                         | Blanco                           | Valkoinen             | Vit                    | Hvid                  | Hvidt                 | Weiss                | White                  | Blanc  | Wit                   | 9                |
| A                | Argento                  | Prateado                       | Plata                            | Hopea                 | Silver                 | Sølv                  | Sølv                  | Silber               | Silver                 | Argent   | Zilver                | A                |
| B                | Oro                      | Dourado                        | Oro                              | Kulta                 | Guld                   | Guld                  | Guldl                 | Gold                 | Gold                   | Or   | Goud                  | B                |

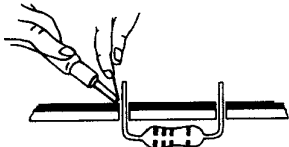

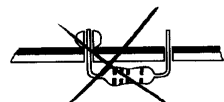
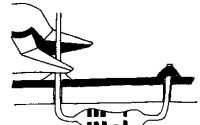
## ASSEMBLY STEPS

### Required tools to assemble the kit:

A small soldering iron of max. 40W.

Thin (1mm) solder, do not use any flux.

A small cutter to trim the excess wires.

- |  |  |   |   |
|--|--|---|---|
| <p><b>1.</b></p>  <p>Mount the components against the PCB surface and carefully solder the leads.</p> | <p><b>2.</b></p>  <p>Obtain cone-shaped, shiny soldered joints by heating the component leads sufficiently.</p> | <p><b>3.</b></p>  <p>This solder joint results in a bad connection.</p> | <p><b>4.</b></p>  <p>Trim the excess wires up to the level of the solder</p> |
|--|--|---|---|

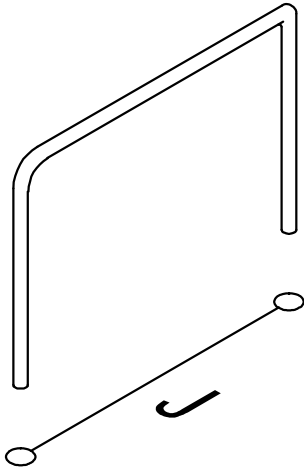
- Careless assembly will certainly lead to troubles.
- Insert the part, oriented correctly, into its correct holes on the PCB.
- Mount the components in the correct order as stated in this manual.
- The component values in the diagram are for reference only. The values in this partlist are correct and must be followed.
- Use the boxes  to tick off your progress.

 Before starting to build, also read the general guidelines

## Assembly

Mount all components onto the PC boards (mount the two boards)

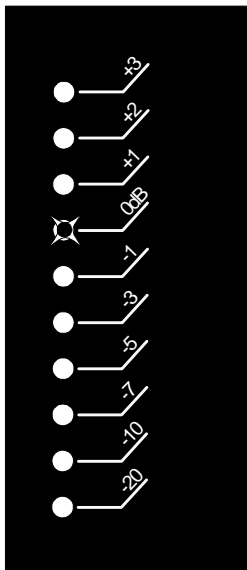
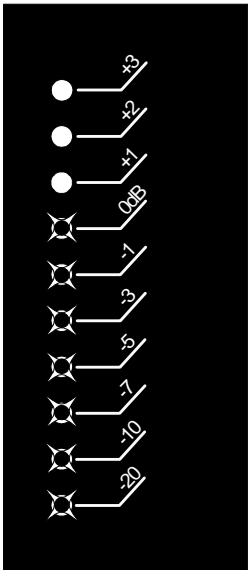
### 1. JUMPERS



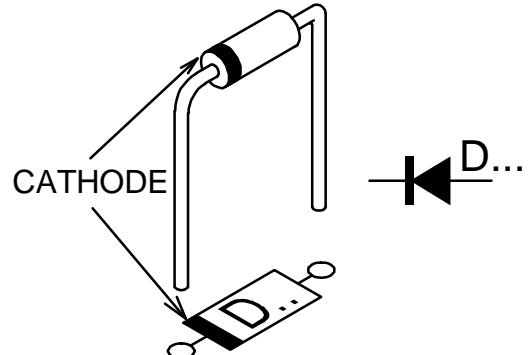
- J1
- J2, mount for BAR mode, do not mount for DOT mode.

BAR

DOT

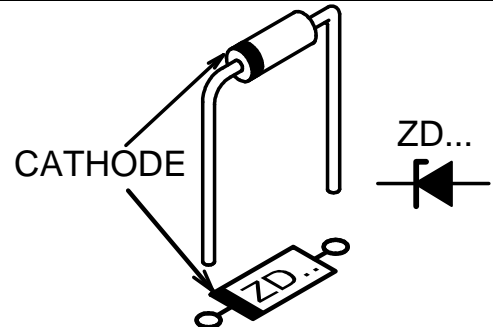


### 2. DIODES (Check the polarity)



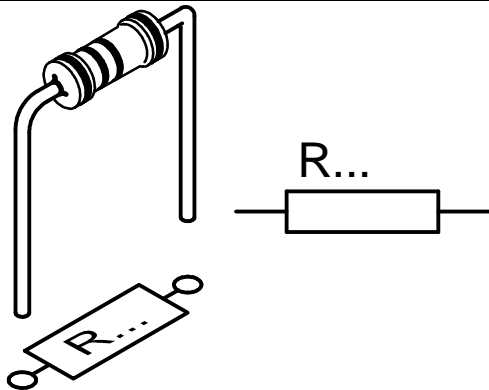
- D1: 1N4148
- D2: 1N4148
- D3: 1N4000... 1N4007

### 3. ZENER DIODES (Check the polarity)



- ZD1: 6,2V (6V2)

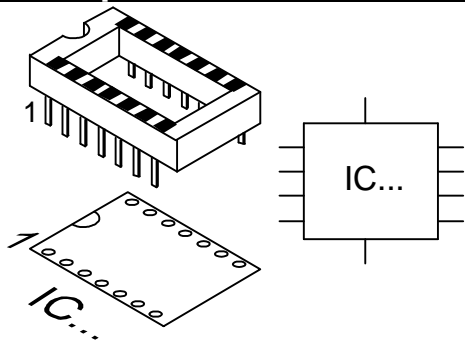
#### 4. 1/4W RESISTORS



- R1: 47K (4-7-3-B)
- R2: 47K (4-7-3-B)
- R3: 330 (3-3-1-B)
- R4: 10K (1-0-3-B)
- R5: 10K (1-0-3-B)
- R6: 2K2 (2-2-2-B)
- R7: 470K (4-7-4-B)

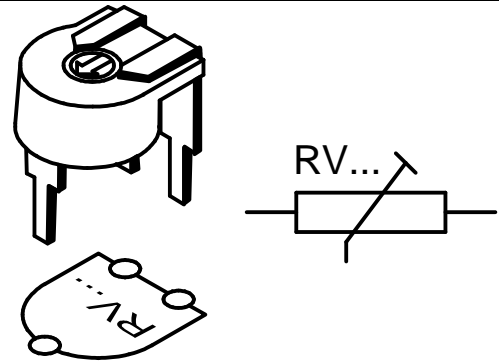
#### 5. IC SOCKETS

(Check the position of the notch)



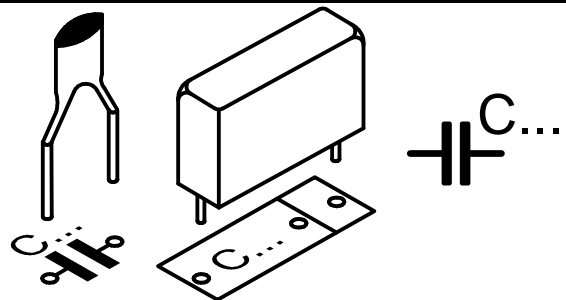
- IC1: 8P
- IC2: 18P

#### 6. RESISTOR TRIMMERS



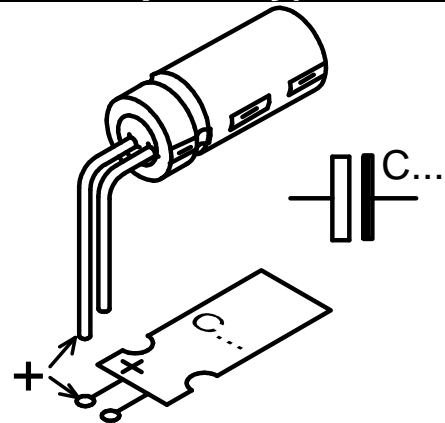
- RV1: 220K (250K)

#### 7. CAPACITORS



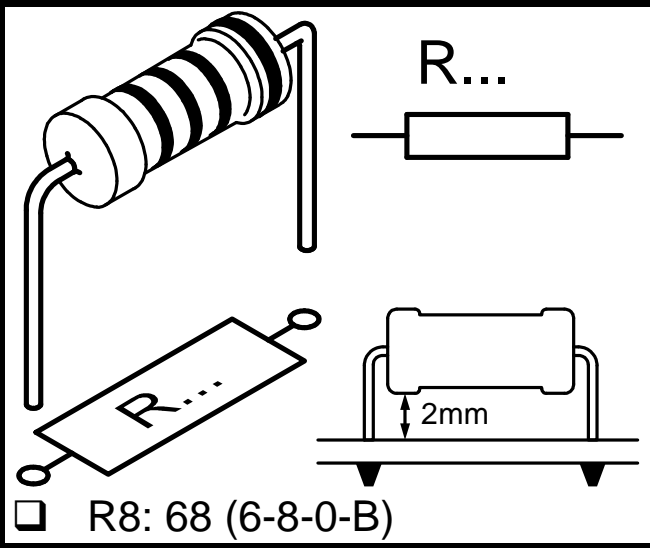
- C1: 220nF (0.22 $\mu$ F, 224)
- C2: 220nF (0.22 $\mu$ F, 224)

#### 8. ELECTROLYTIC CAPACITOR (Check the polarity)

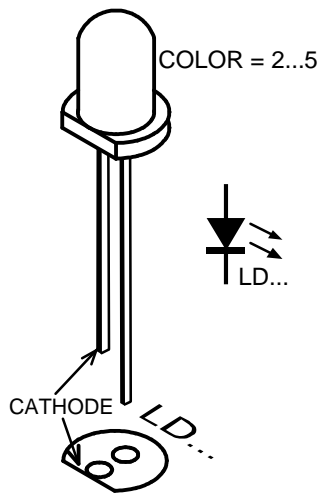
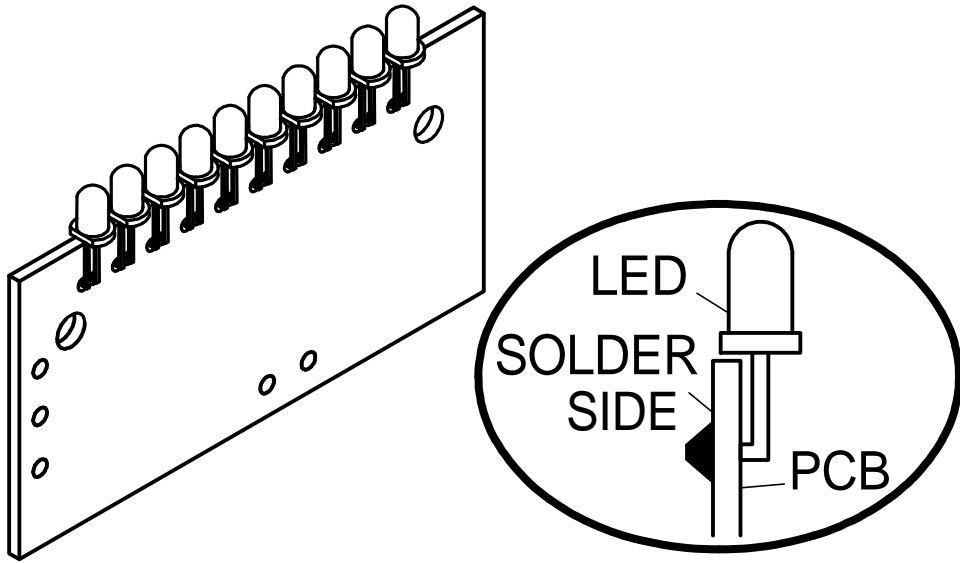


- C3: 47 $\mu$ F
- C4: 47 $\mu$ F
- C5: 47 $\mu$ F

## 9. 1W RESISTORS

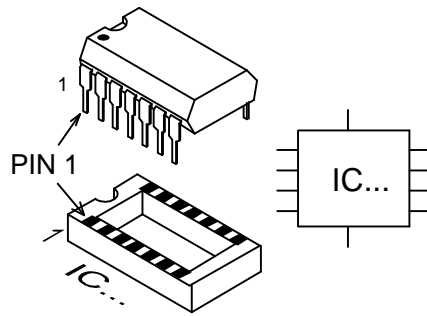


## 10. MOUNT THE LEDs, BEND THE LEADS CAREFULLY (Check the polarity)



- LD1: green (5)
- LD2: green (5)
- LD3: green (5)
- LD4: green (5)
- LD5: green (5)
- LD6: green (5)
- LD7: green (5)
- LD8: yellow (4)
- LD9: yellow (4)
- LD10: red (2)

**11. Insert the IC's in the socket (Check the position of the notch)**

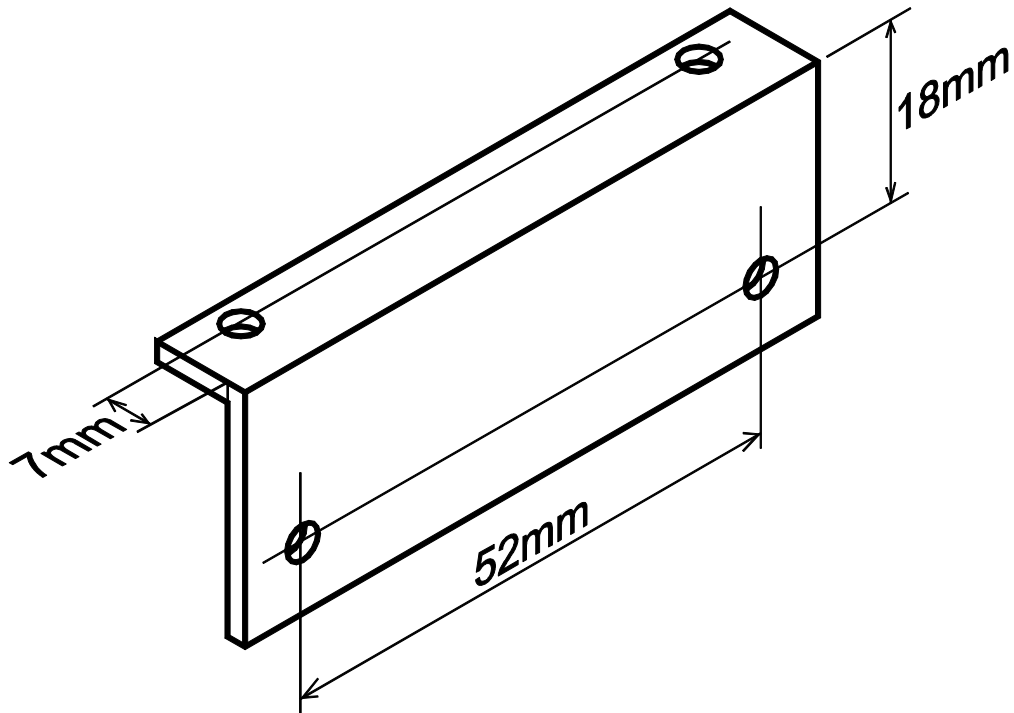


- IC1: 741
- IC2: LM3916

Mount the units in a suitable housing or on a suitable panel:

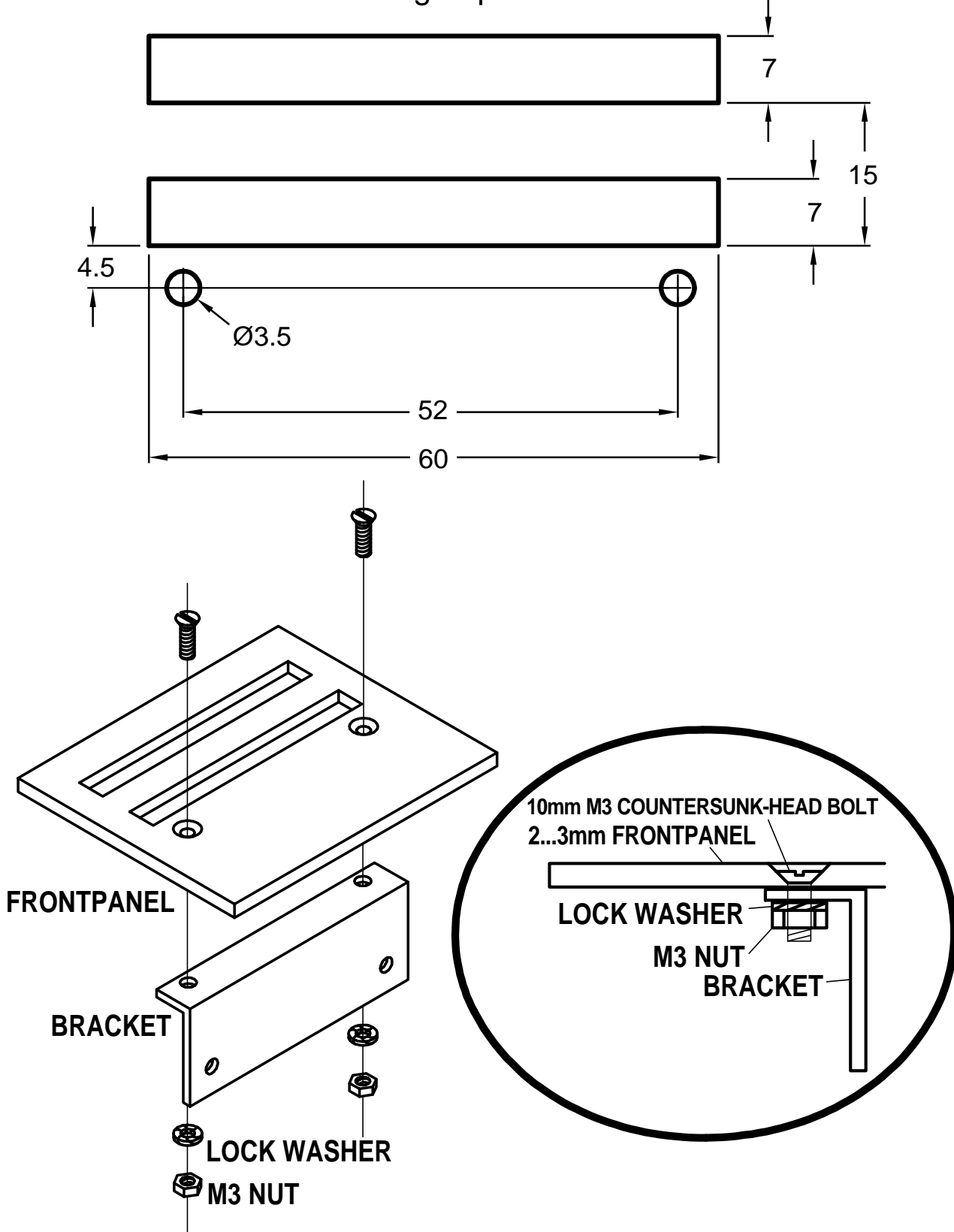
**12. Mounting possibility:**

A. Make or search for suitable bracket:

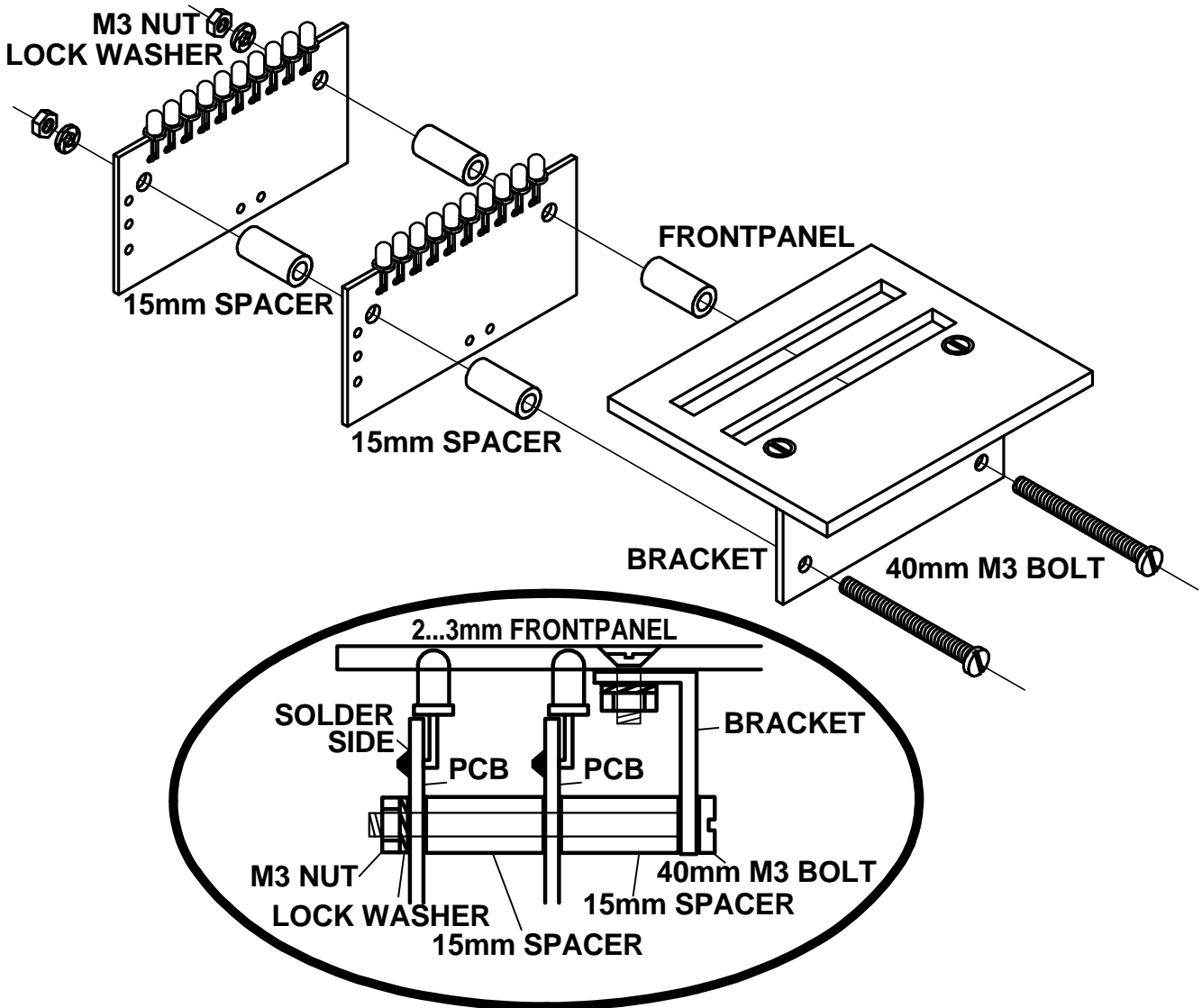




B. Make the holes in the housing or panel and mount the bracket:

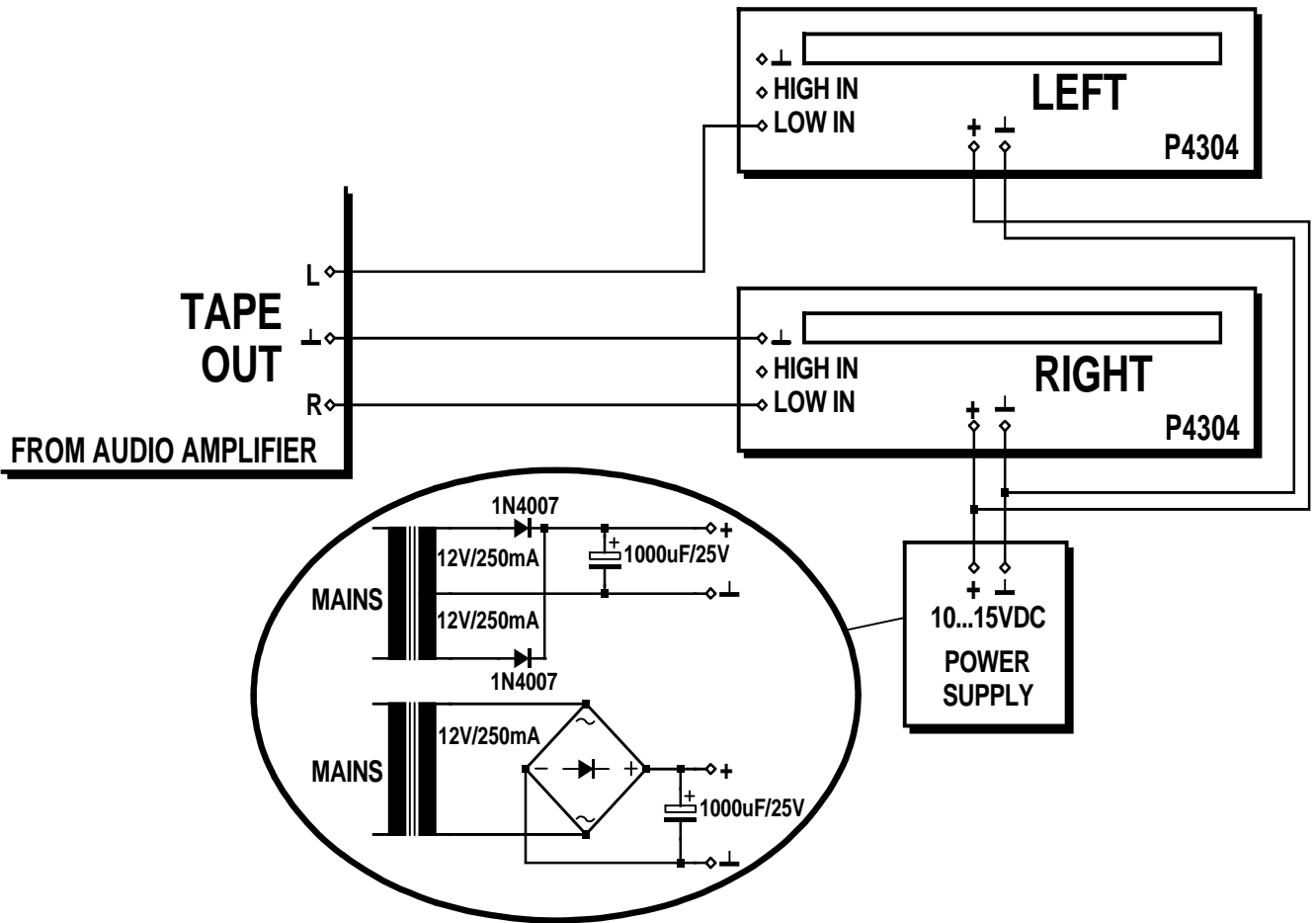


C. Mount the PCB's with spacers onto the bracket:



Connect the unit to a suitable signal, this can be line level (LOW input) :

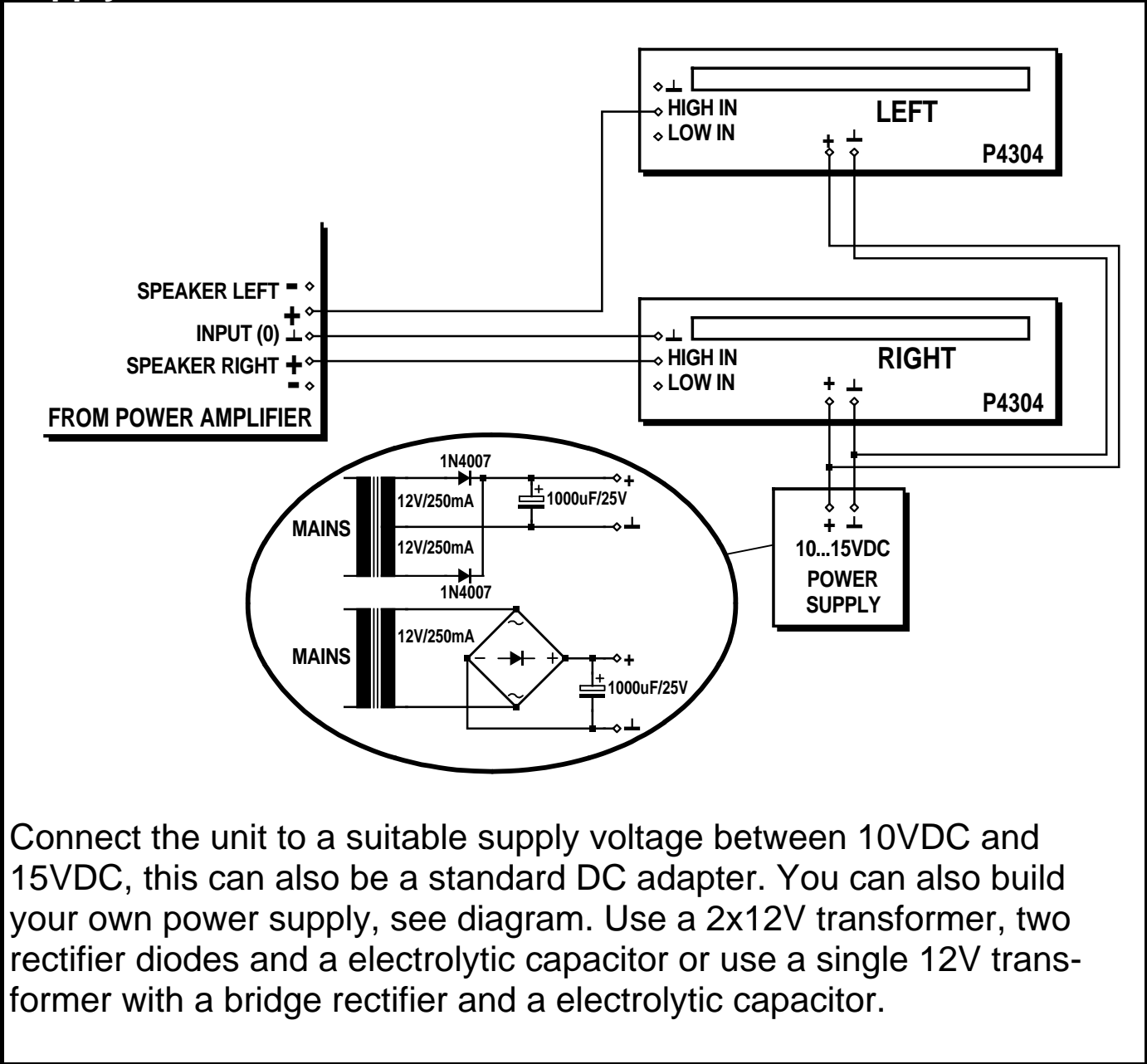
**13. Connecting to a line level output (tuner, preamp, cd player... ) and connecting a power supply from 10 to 15VDC / 250mA max..**



Connect the unit to a suitable supply voltage between 10VDC and 15VDC, this can also be a standard DC adapter. You can also build your own power supply, see diagram. Use a 2x12V transformer, two rectifier diodes and a electrolytic capacitor or use a single 12V transformer with a bridge rectifier and a electrolytic capacitor.

Connect the unit to a speaker output (HIGH input):

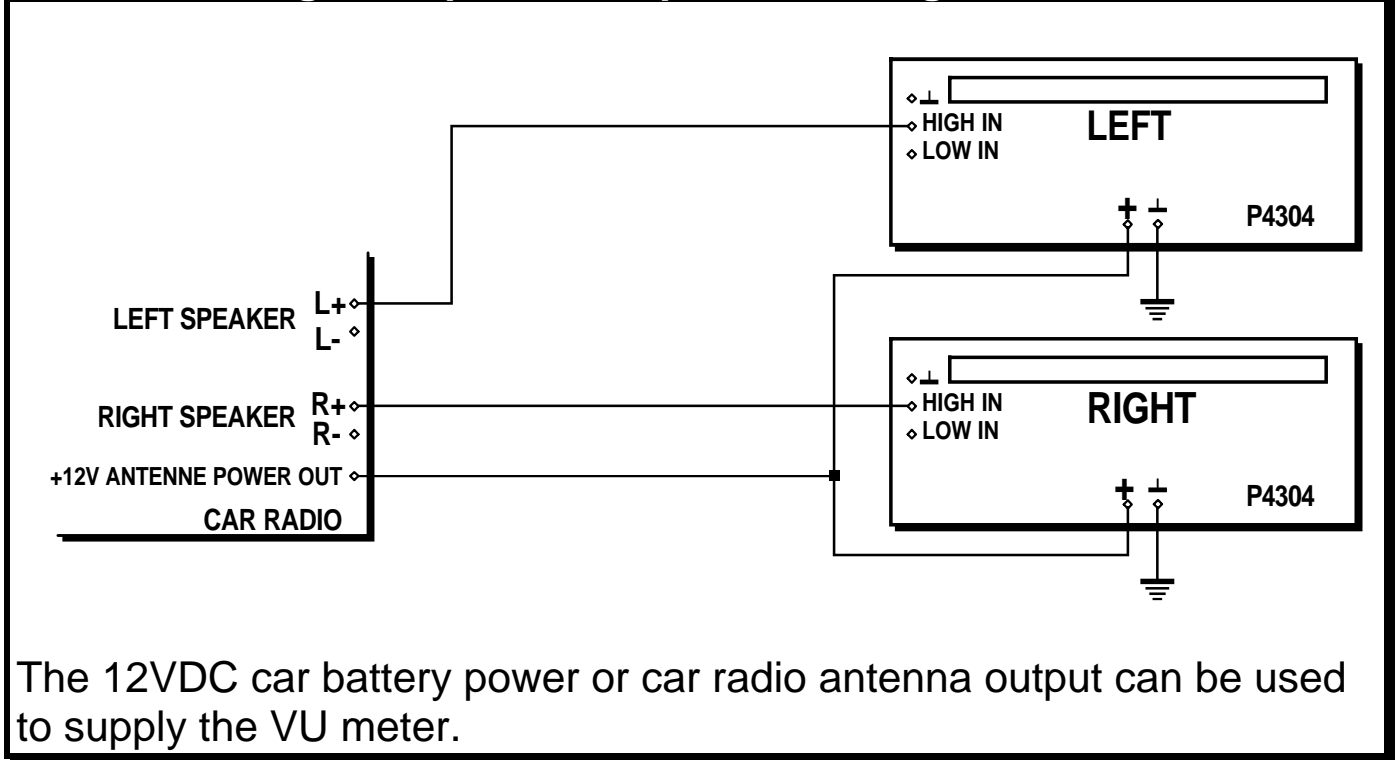
**14. Connecting to a speaker level output and connecting a power supply from 10 to 15VDC / 250mA max..**



Connect the unit to a suitable supply voltage between 10VDC and 15VDC, this can also be a standard DC adapter. You can also build your own power supply, see diagram. Use a 2x12V transformer, two rectifier diodes and a electrolytic capacitor or use a single 12V transformer with a bridge rectifier and a electrolytic capacitor.

Connect the unit to a car radio:

**15. Connecting to a speaker output from a regular car radio.**



The 12VDC car battery power or car radio antenna output can be used to supply the VU meter.

**REMARK:** Do not connect the unit to a high power car booster or car stereo, this equipment uses isolated ground connection. The connection to this kind of amplifier can cause permanent damage to the amplifier or car radio!

- Adjust the units sensitivity according to your preference by means of the trim potentiometer RV1

