

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

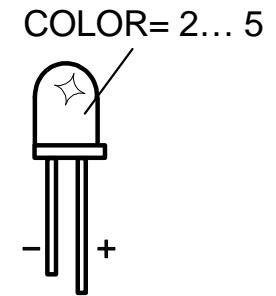
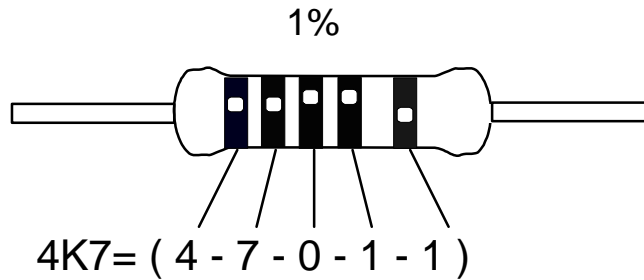
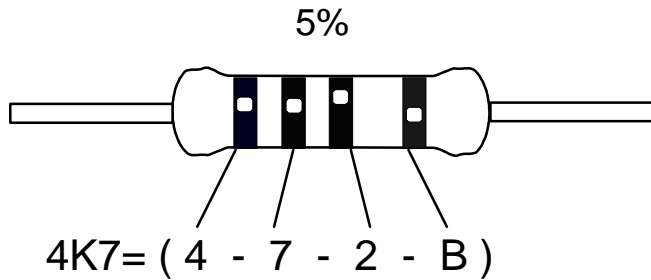
- For instant visualization of audio signal levels.
- Easy hook up to a LINE level ( LOW input) signal source.
- For use with mixing panels, amplifiers, CD players, radio's, ...
- A special input (HIGH INPUT) is provided, which allows direct connection to a SPEAKER\* output .
- DOT or BAR display mode 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 O D E	I	P	E	SF	S	DK	N	D	GB	F	NL	C O D E
	<i>CODICE COLORE</i>	<i>CODIGO DE CORES</i>	<i>CODIGO DE COLORES</i>	<i>VÄRI KOODI</i>	<i>FÄRG SCHEMA</i>	<i>FARVE KODE</i>	<i>FARGE KODE</i>	<i>FARB KODE</i>	<i>COLOUR CODE</i>	<i>CODIFI- CATION DES COU- LEURS</i>	<i>KLEUR 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

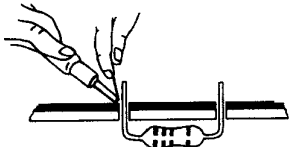

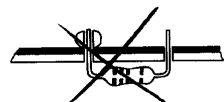
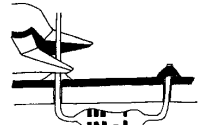
## ASSEMBLY STEPS

### 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> |
|--|--|---|---|

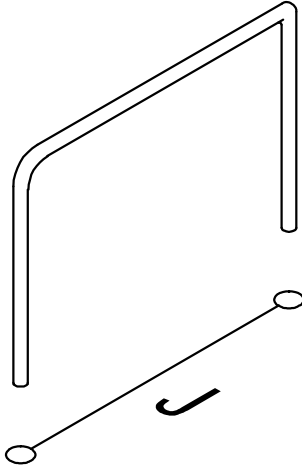
- Careless assembly will certainly lead to troubles.
- Insert the part, oriented correctly, into its correct holes on the PCB.
- Mount the components in the correct order as stated in this manual.
- The component values in the diagram are for reference only. The values in this partlist are correct and 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)

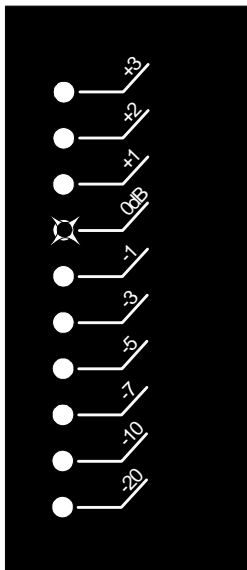
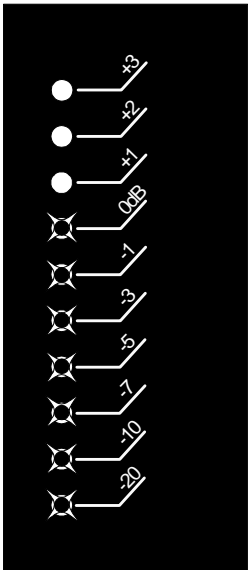
### 1. JUMPERS



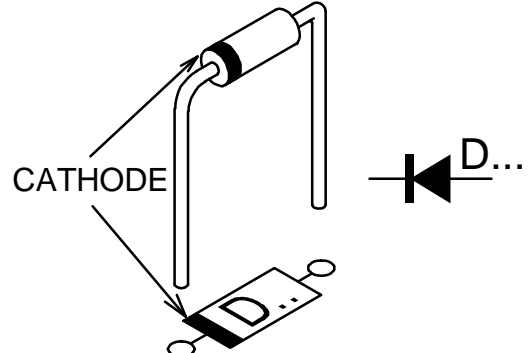
- J1
- J2, mount for BAR mode, do not mount for DOT mode.

BAR

DOT

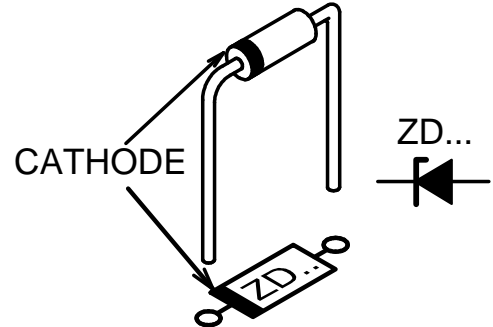


### 2. DIODES (Check the polarity)



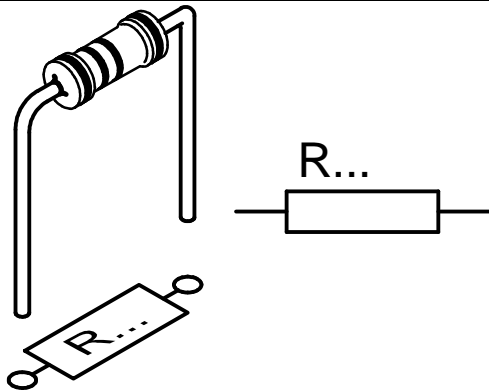
- D1: 1N4148
- D2: 1N4148
- D3: 1N4000... 1N4007

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



- ZD1: 6,2V (6V2)

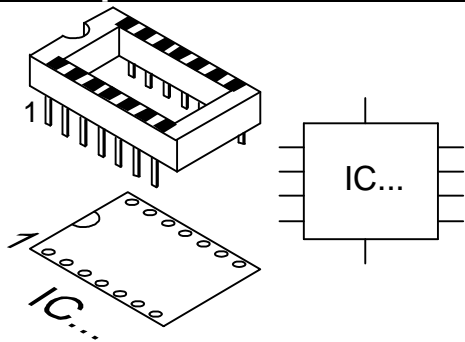
#### 4. 1/4W RESISTORS



- 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)

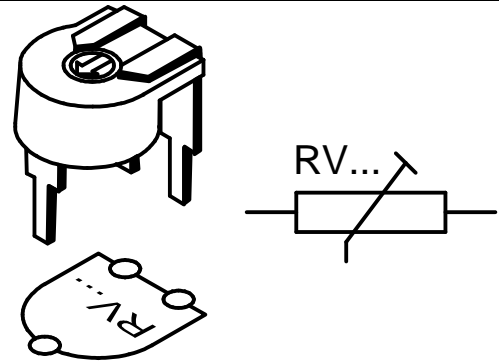
#### 5. IC SOCKETS

(Check the position of the notch)



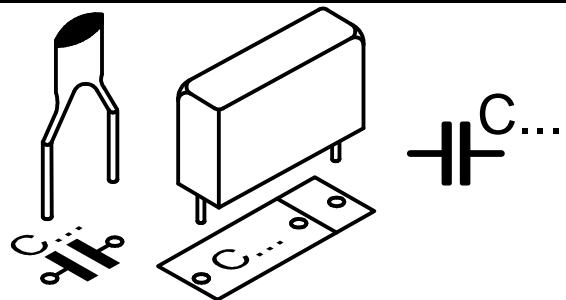
- IC1: 8P
- IC2: 18P

#### 6. RESISTOR TRIMMERS



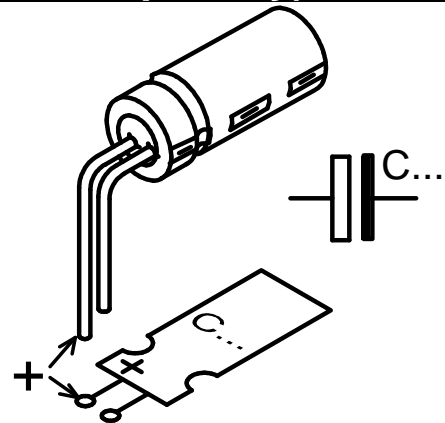
- RV1: 220K (250K)

#### 7. CAPACITORS



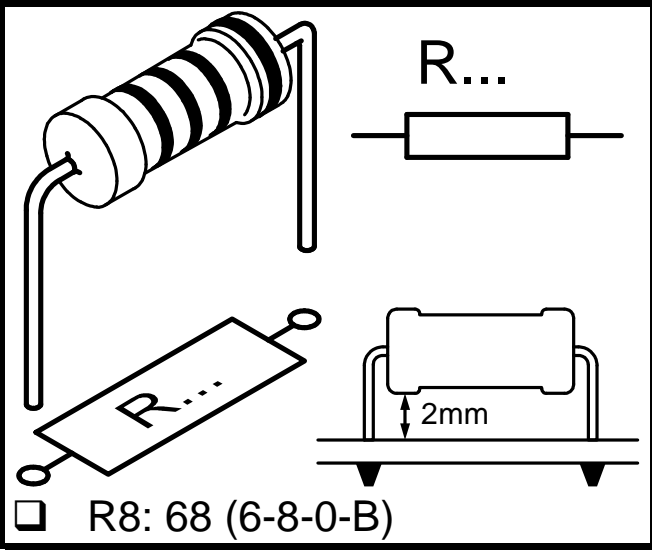
- C1: 220nF (0.22 $\mu$ F, 224)
- C2: 220nF (0.22 $\mu$ F, 224)

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

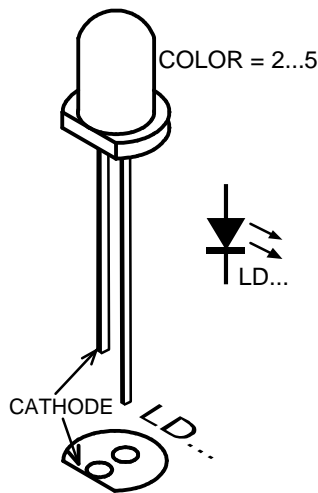
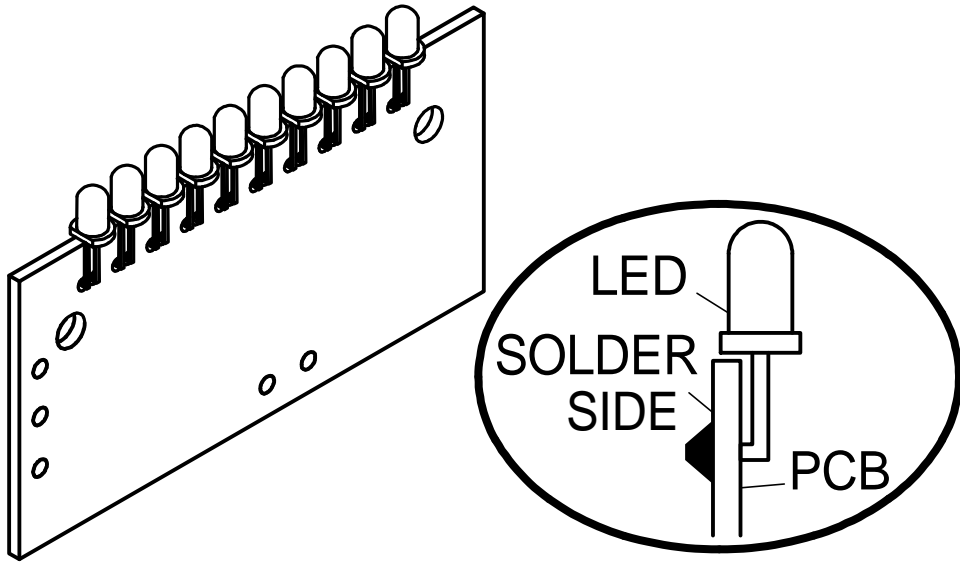


- C3: 47 $\mu$ F
- C4: 47 $\mu$ F
- C5: 47 $\mu$ F

## 9. 1W RESISTORS

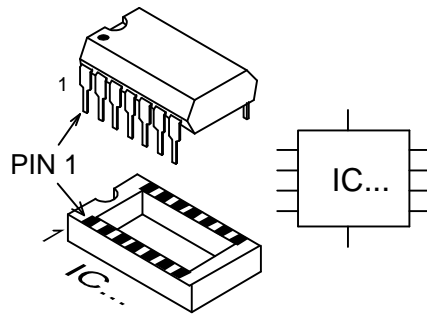


## 10. MOUNT THE LEDs, BEND THE LEADS CAREFULLY (Check the polarity)



- 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)**

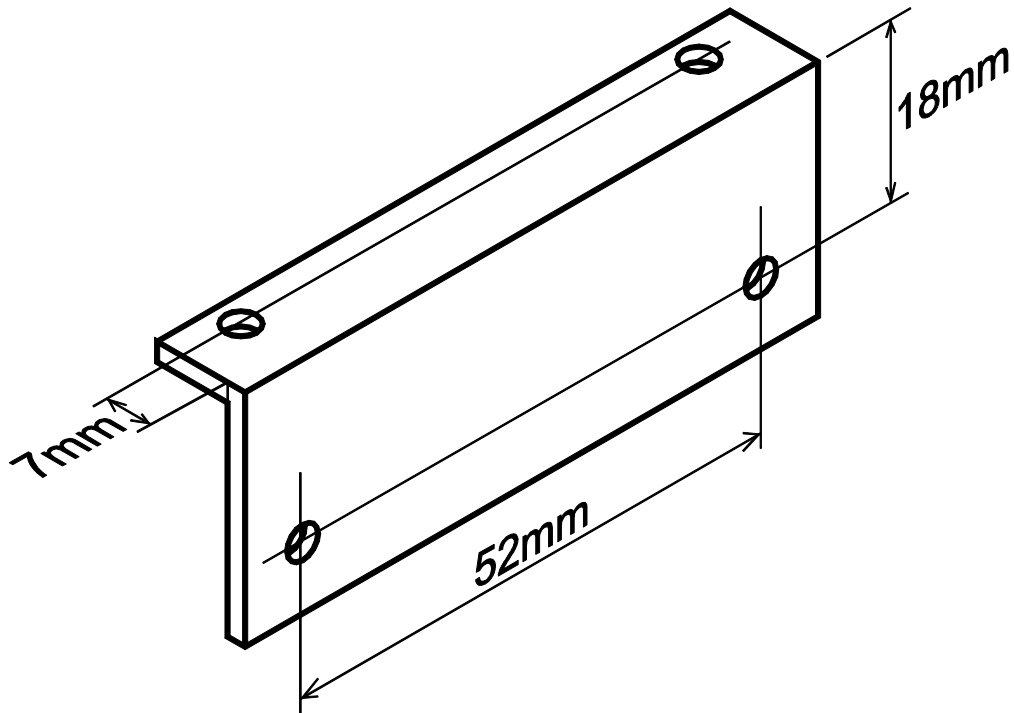


- IC1: 741
- IC2: LM3916

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

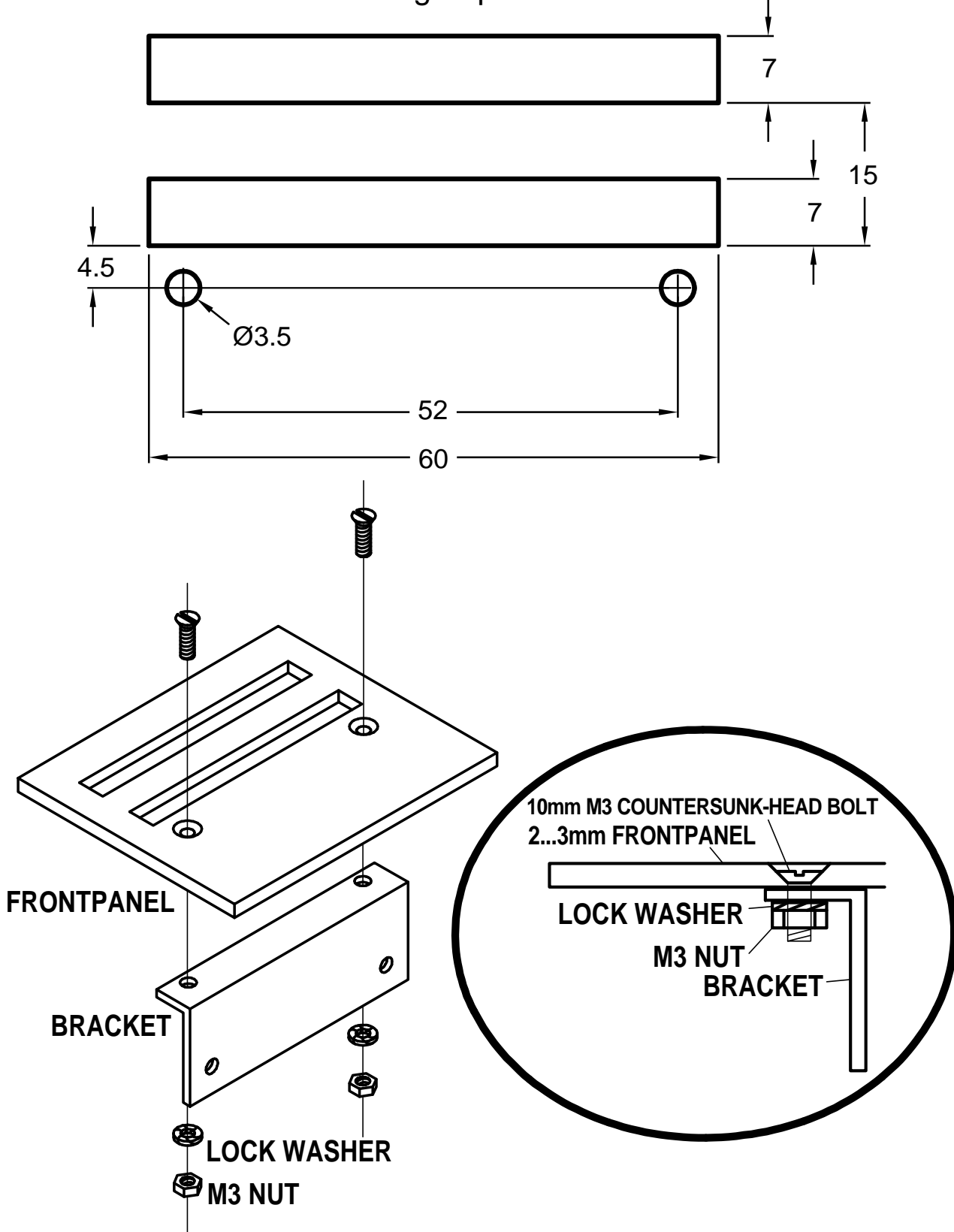
**12. Mounting possibility:**

A. Make or search for suitable bracket:

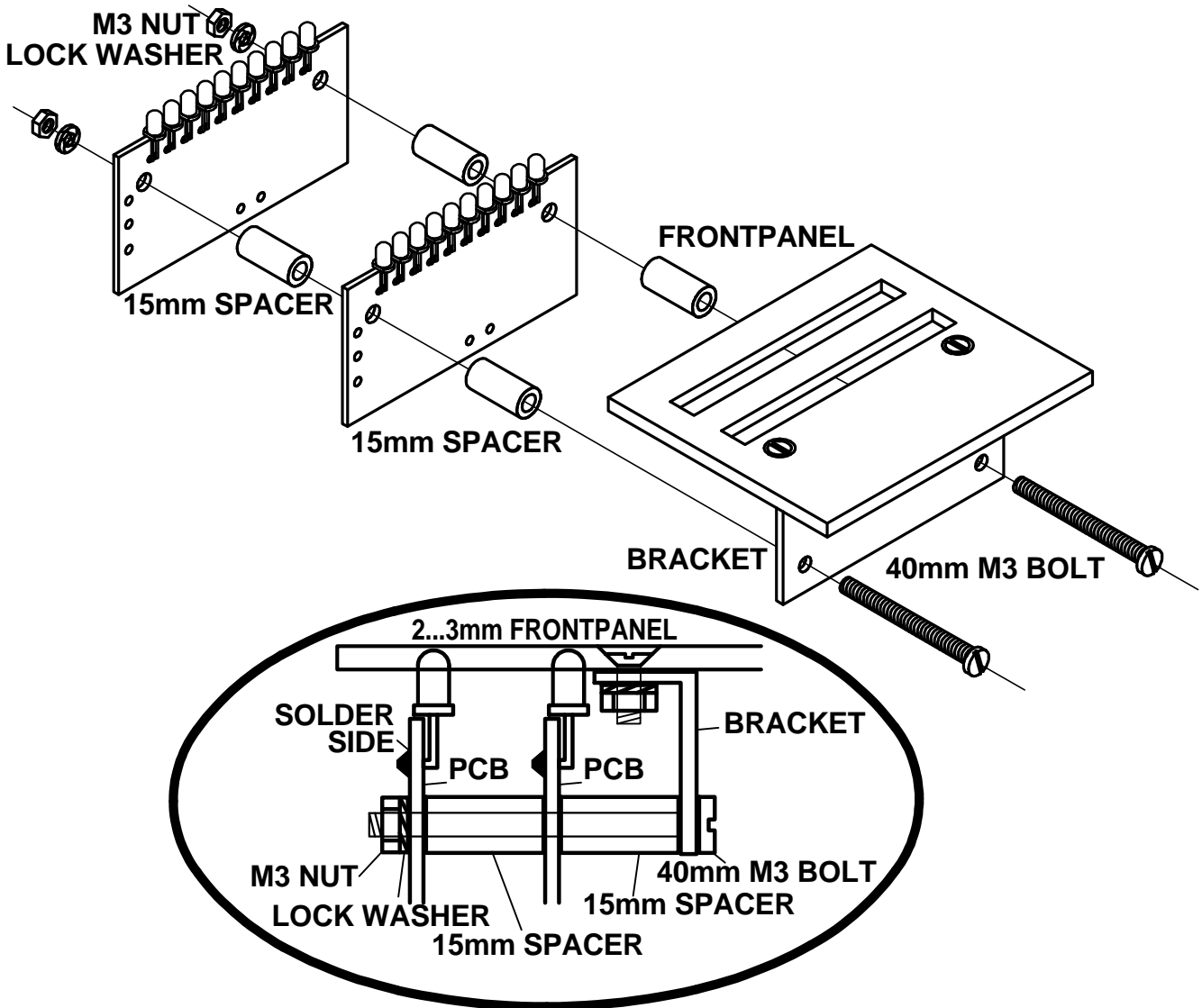




B. Make the holes in the housing or panel and mount the bracket:

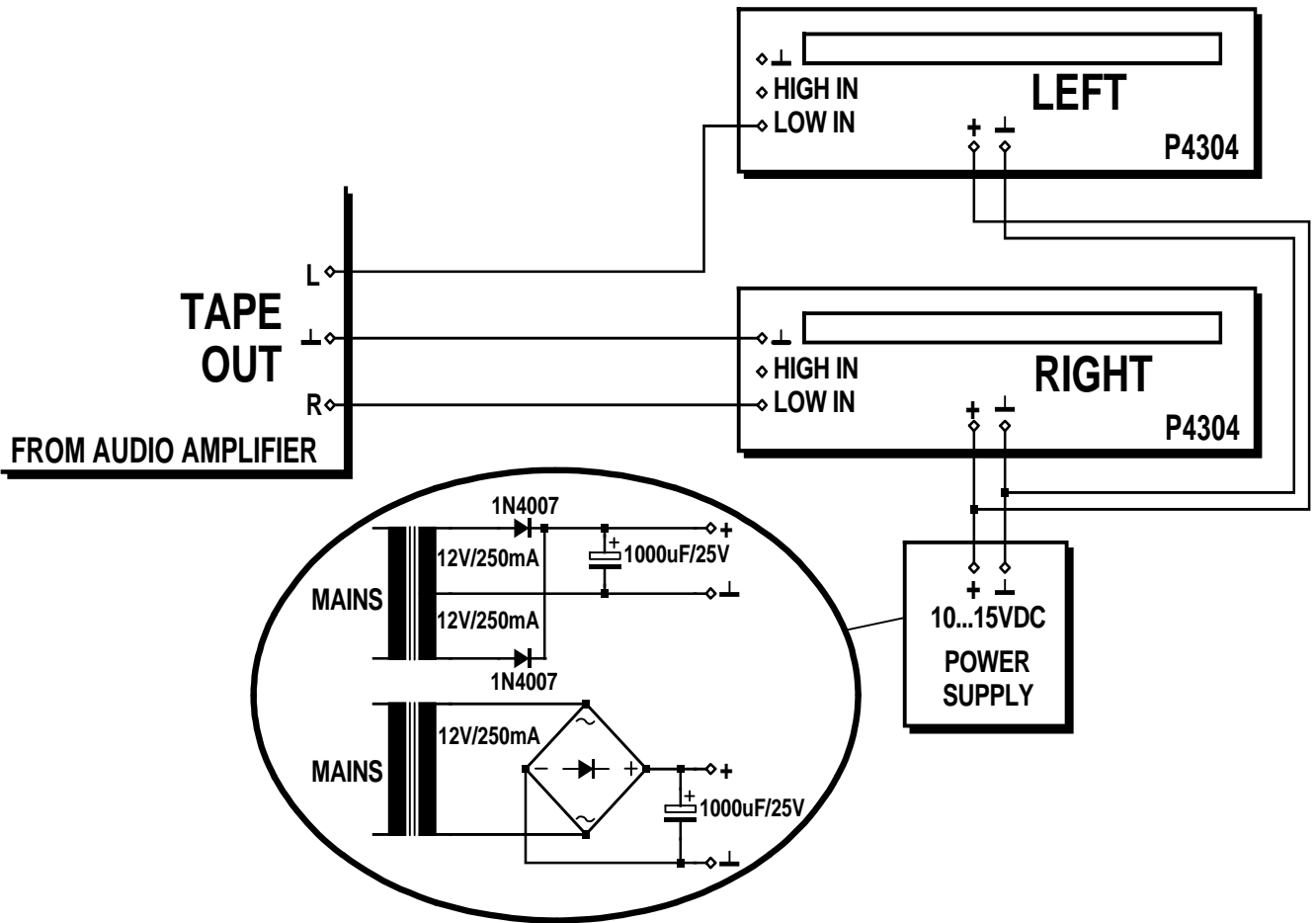


C. Mount the PCB's with spacers onto the bracket:



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

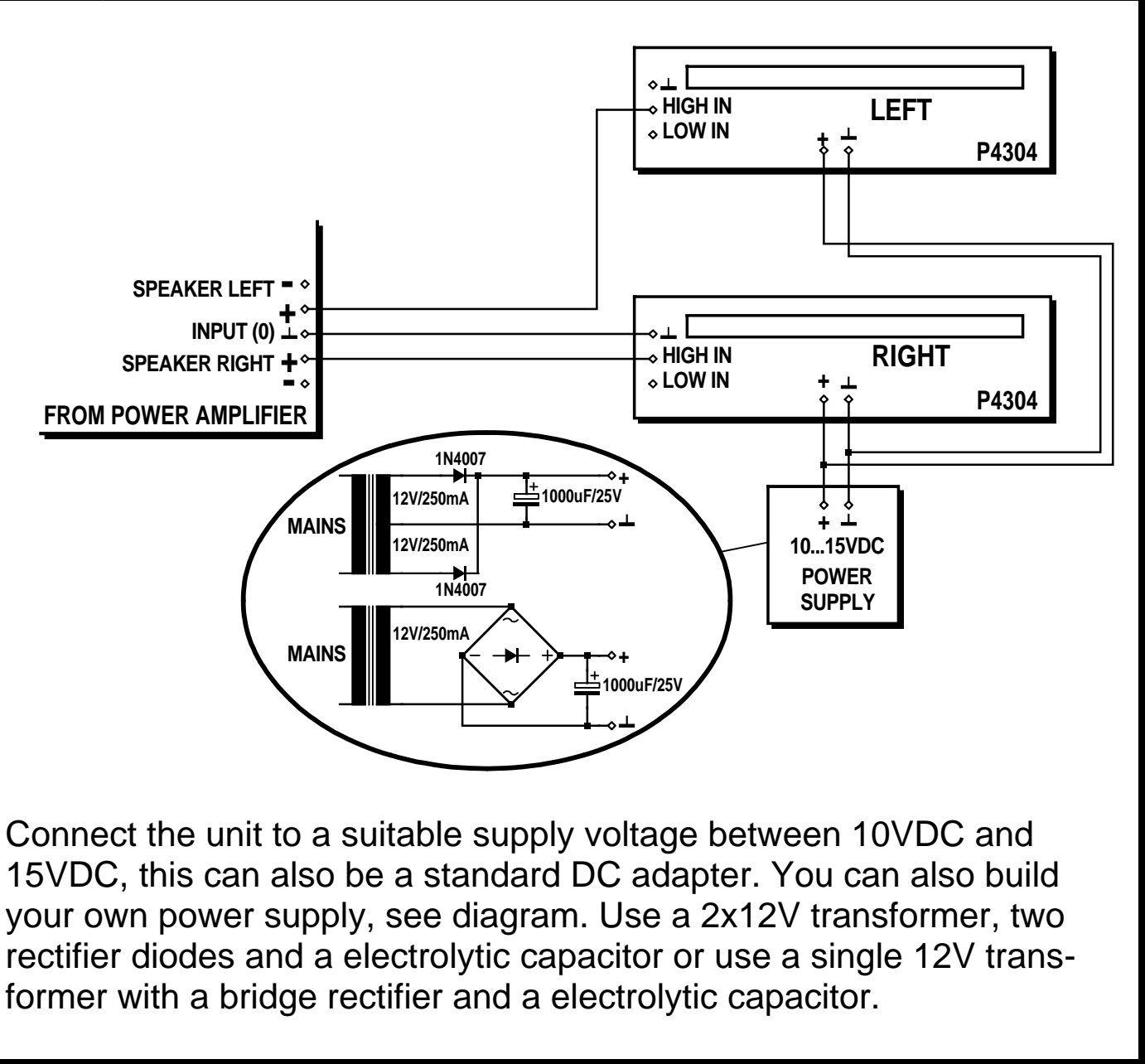
**13. Connecting to a line level output (tuner, preamp, cd player... ) and connecting a power supply from 10 to 15VDC / 250mA max..**



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):

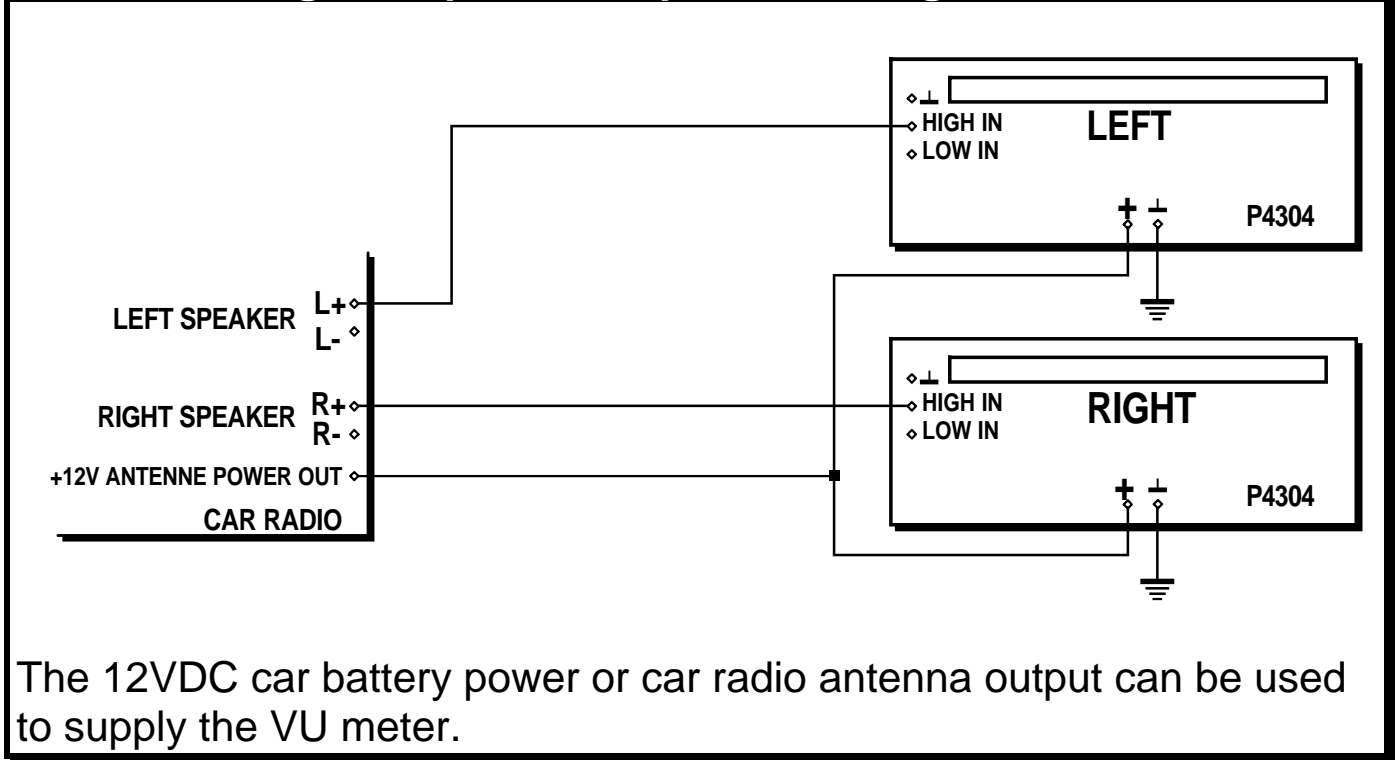
**14. Connecting to a speaker level output and connecting a power supply from 10 to 15VDC / 250mA max..**



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

