

# POCKET AUDIO GENERATOR



## ***K8065***

*Great little gadget for service  
repair, testing, education, etc...*





**VELLEMAN NV**  
**Legen Heirweg 33**  
**9890 Gavere**  
**Belgium Europe**  
**[www.velleman.be](http://www.velleman.be)**  
**[www.velleman-kit.com](http://www.velleman-kit.com)**

**Features:**

- ☑ Microprocessor technology
- ☑ Digital waveform generation

**Specifications:**

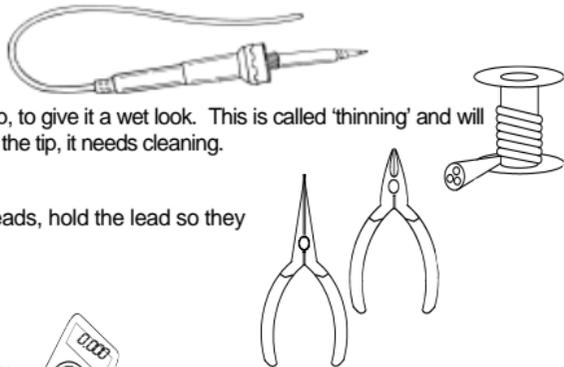
- Sine wave: 50Hz, 100Hz, 1KHz, 10KHz, 20KHz
- Burst: 50Hz, 100Hz, 1KHz
- Burst mode: 20ms ON, 500ms OFF
- Noise: 32-bit digital noise
- Output level (10Kohm): 0 to 775mV (0dB)
- Outputs: 2 x RCA (cinch)
- Power supply: 2 x CR2016 or 2 x CR2025 battery (excl.)
- Dimensions: 86 x 50 x 25mm (3.4" x 2.0" x 1.0")

**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**

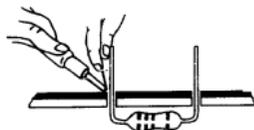


**1.2 Assembly Hints :**

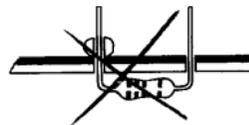
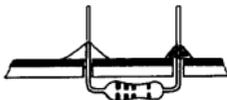
- ⇒ Make sure the skill level matches your experience, to avoid disappointments.
  - ⇒ Follow the instructions carefully. Read and understand the entire step before you perform each operation.
  - ⇒ Perform the assembly in the correct order as stated in this manual
  - ⇒ Position all parts on the PCB (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 :

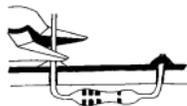
1- Mount the component against the PCB surface and carefully solder the leads



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

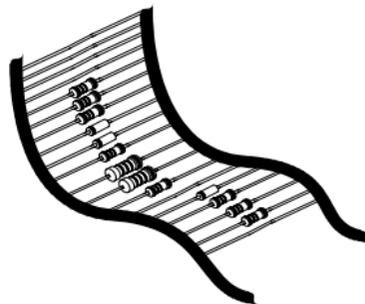


3- Trim excess leads as close as possible to the solder joint



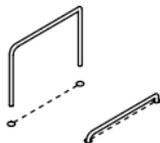
**AXIAL COMPONENTS ARE TAPED IN THE CORRECT MOUNTING SEQUENCE !**

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

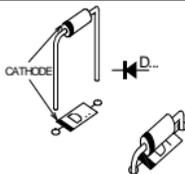


**1. Jumper**

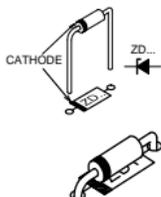
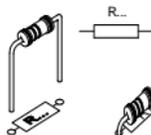
- J1
- J2

**2. Diode. Watch the polarity !**

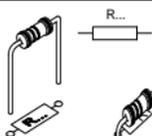
- D1 : 1N4148

**3. Zenerdiode. Watch the polarity !**

- ZD1 : 5V1

**4. Metal film resistors**

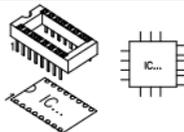
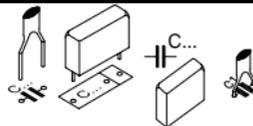
- R3 : 20K (2 - 0 - 0 - 2 - 1)
- R14 : 10K (1 - 0 - 0 - 2 - 1)

**5. Resistors**

- R17 : 1K5 (1 - 5 - 2 - B)
- R19 : 1K (1 - 0 - 2 - B)

**6. IC socket, Watch the position of the notch !**

- IC1 : 14P

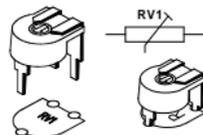
**7. Capacitors.**

- C1 : 15pF (15)
- C2 : 15pF (15)
- C3 : 100nF (104)

- C5 : 560pF (561)
- C6 : 10nF (103)
- C7 : 15nF (153)

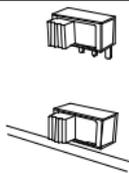
**8. Resistor trimmer**

- RV1 : 1K



### 9. Slide switch.

SW1

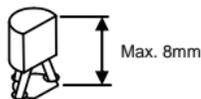


### 10. Battery holder

E1

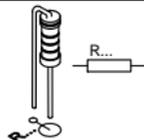


### 11. Transistors



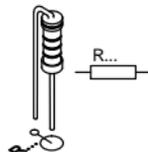
- T1 : BC547C
- T2 : BC547C
- T3 : BC557C

### 12. Vertical metal film resistors



- R1 : 20K (2 - 0 - 0 - 2 - 1)
- R2 : 20K (2 - 0 - 0 - 2 - 1)
- R4 : 20K (2 - 0 - 0 - 2 - 1)
- R5 : 20K (2 - 0 - 0 - 2 - 1)
- R6 : 20K (2 - 0 - 0 - 2 - 1)
- R7 : 20K (2 - 0 - 0 - 2 - 1)
- R8 : 20K (2 - 0 - 0 - 2 - 1)
- R9 : 10K (1 - 0 - 0 - 2 - 1)
- R10: 10K (1 - 0 - 0 - 2 - 1)
- R11: 10K (1 - 0 - 0 - 2 - 1)
- R12: 10K (1 - 0 - 0 - 2 - 1)
- R13: 10K (1 - 0 - 0 - 2 - 1)
- R15: 10K (1 - 0 - 0 - 2 - 1)

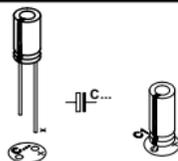
### 13. Vertical resistors



- R16 : 1K5 (1 - 5 - 2 - B)
- R18 : 1K5 (1 - 5 - 2 - B)

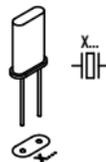
### 14. Electrolytic Capacitor. Watch the polarity !

C4 : 47µF

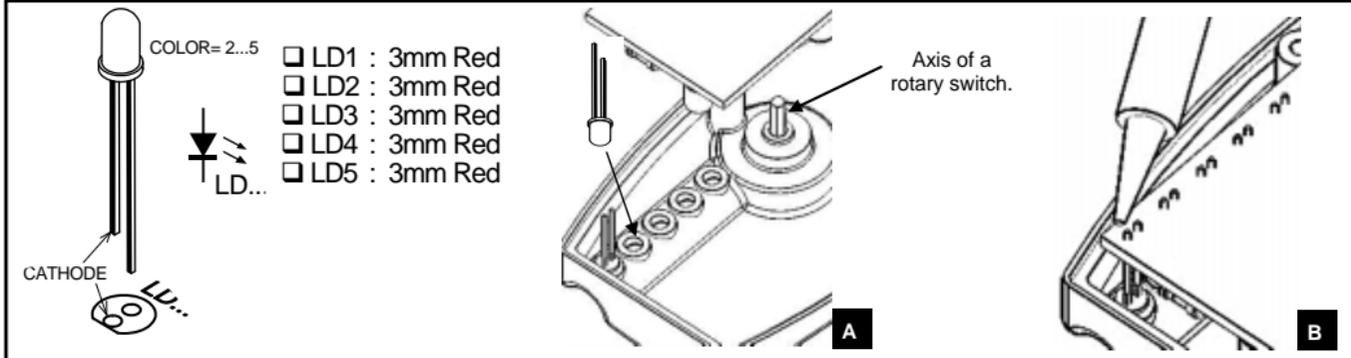


### 15. crystal

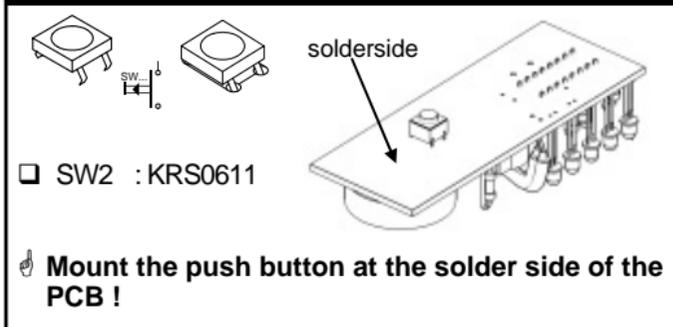
X1 : 20MHz



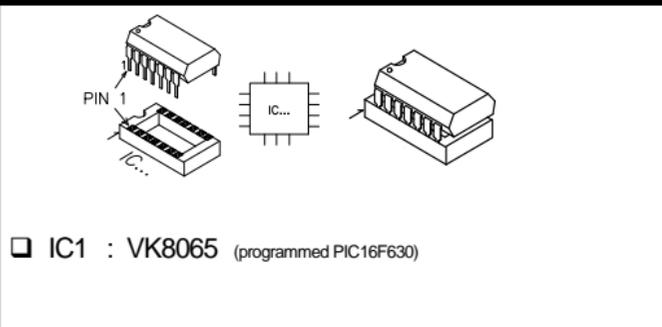
## 16. LEDs. Watch the polarity!



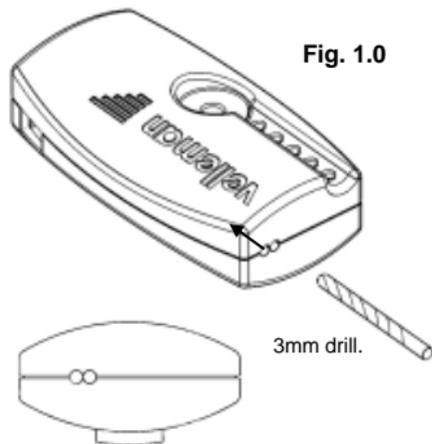
## 17. Push button.



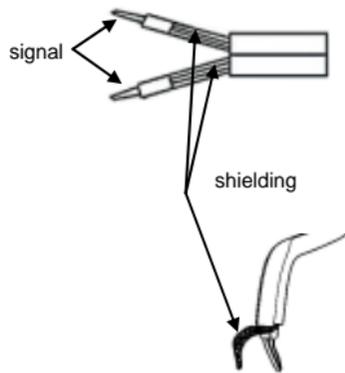
## 18. IC. Watch the position of the notch!



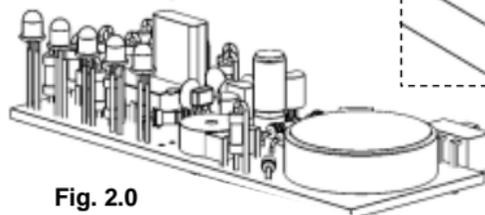
## 19. Assembly



- ❑ Close the enclosure with the 2 supplied screws.
- ❑ Drill two  $\varnothing 3\text{mm}$  holes in the housing according to figure 1.0. The RCA cable will run through them.



- ❑ Solder the signal wires or the RCA cable to the 'OUT' terminal on the PCB (see figure 2.0).
- ❑ Solder the shielding of the RCA cable to the 'GND' terminal on the PCB (see figure 2.0).



- ❑ Insert two CR2025 or two CR2016 batteries into the battery holder. Mind the polarity!, see figure 3.0
- ❑ Mount all parts and close the housing by means of the enclosed screws, see figure 4.0.

☞ **BEWARE:** Do not forget to feed the RCA cable through the two holes in the housing.

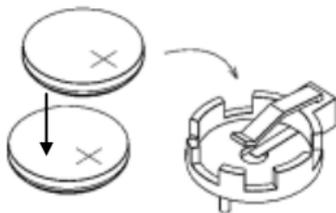


Fig. 3.0

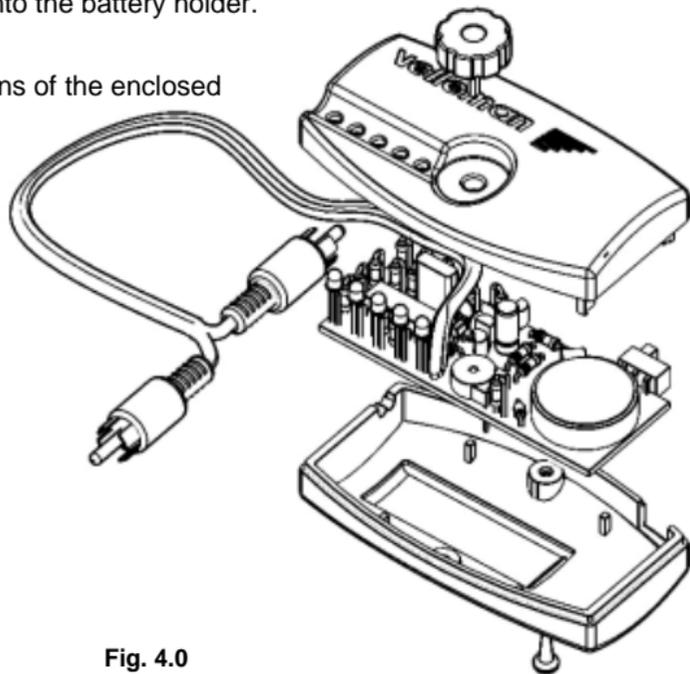


Fig. 4.0

- ❑ Now stick the enclosed stickers to the housing (see fig. 5.0)

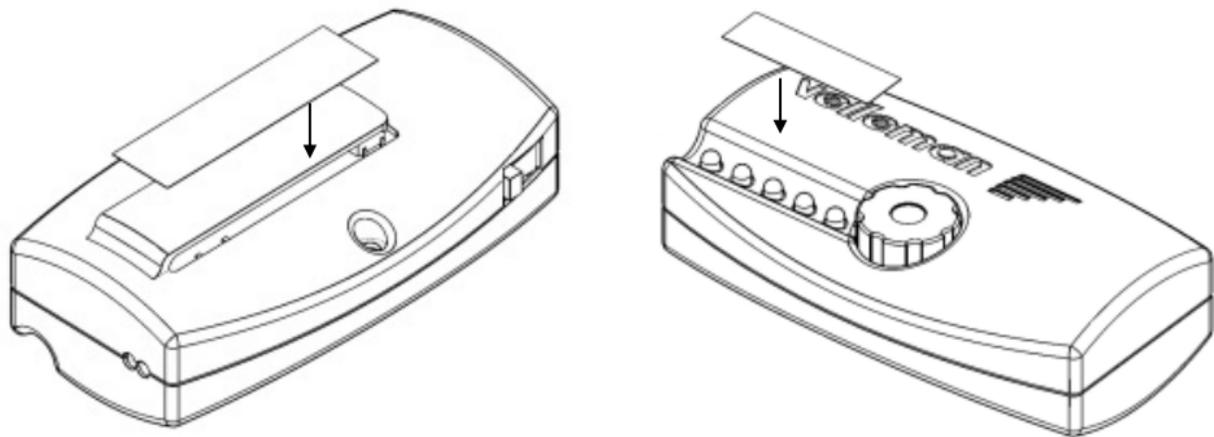
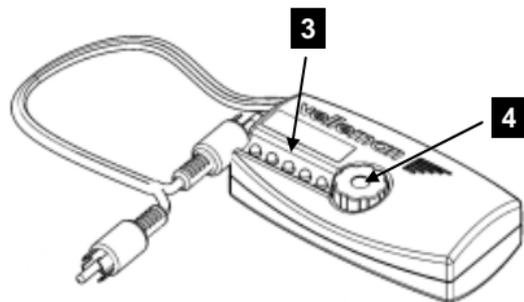
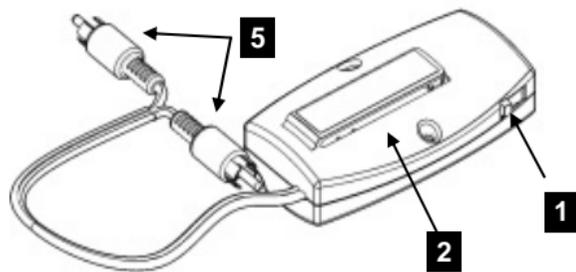


Fig. 5.0

## 20. Instructions



Front side



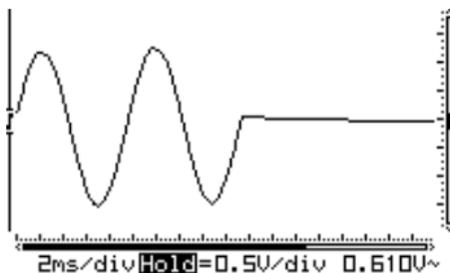
Back side

1. On/Off switch
2. Frequency/mode select button
3. Frequency/mode indicators
4. Level adjust
5. RCA outputs

- Selecting a frequency : press (2) repeatedly until the LED indication displays the right frequency.
- Toggle between normal and burst mode\* : Hold selector (2) for a few seconds and then release it. The indication LED flashes 3x for the burst mode and only once for the normal mode.

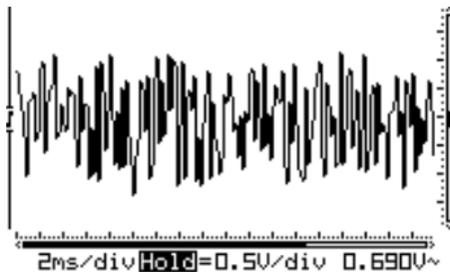
\* Burst-mode: output: 20ms on, 500ms off (50Hz, 100Hz & 1KHz only)

Example : 100Hz burst signal :



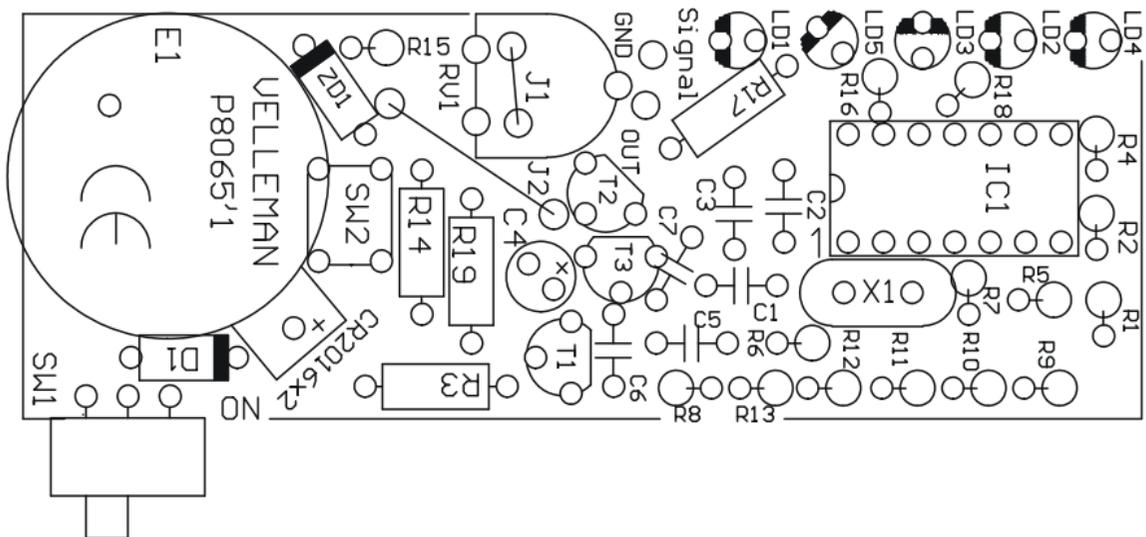
**100Hz.**

- 'Noise' mode : hold (2) and activate the device, then release button (2). The 'noise' mode is indicated by the two bottom LEDs.

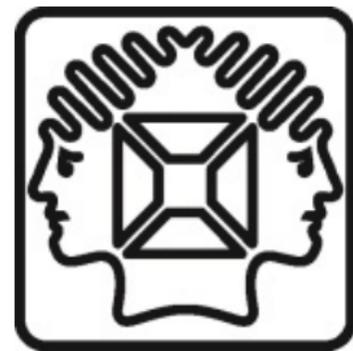


**Noise output**

## 21. PCB layout.







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H8065IP'1 - 2014 (rev.2)



5 4 1 0 3 2 9 1 3 2 7 5 5 2