

Total solder points: 109

Difficulty level: *beginner* 1 2 3 4 5 *advanced*

velleman[®] HIGH-Q **kit** 

POCKET AUDIO GENERATOR



K8065

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



Features:

- ☑ Microprocessor technology
- ☑ Digital waveform generation

Specifications:

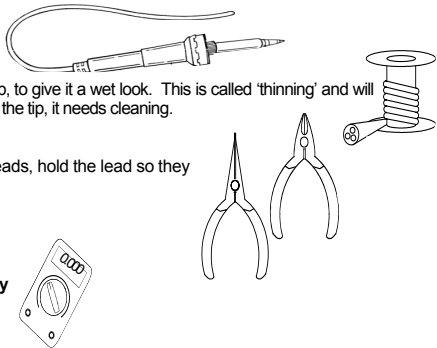
- Sine wave: 50Hz, 100Hz, 1KHz, 10KHz, 20KHz
- Burst: 50Hz, 100Hz, 1KHz
- Burst mode: 20ms ON, 500ms OFF
- Noise: 32-bit digital noise
- Output level (10Kohm): 0 to 775mV (0dB)
- Outputs: 2 x RCA (cinch)
- Power supply: 2 x CR2016 or 2 x CR2025 battery (excl.)
- Dimensions: 86 x 50 x 25mm (3.4" x 2.0"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



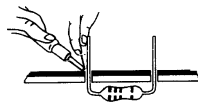
1.2 Assembly Hints :

- ⇒ 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

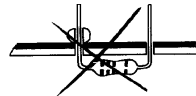
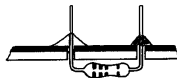
* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as 'NOTE' on a separate leaflet.

1.3 Soldering Hints :

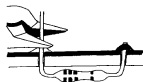
1- Mount the component against the PCB surface and carefully solder the leads



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

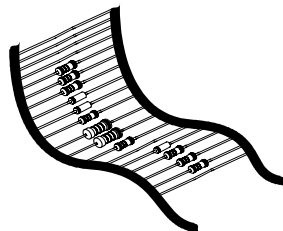



3- Trim excess leads as close as possible to the solder joint



AXIAL COMPONENTS ARE TAPED IN THE CORRECT MOUNTING SEQUENCE !

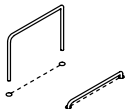
REMOVE THEM FROM THE TAPE ONE AT A TIME !



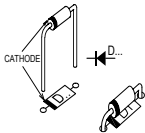
 You will find the colour code for the resistances and the LEDs in the HALG (general manual) and on our website: <http://www.velleman.be/common/service.aspx>

1. Jumper

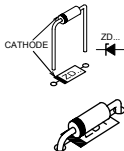
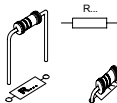
- J1
- J2

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

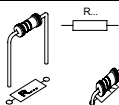
- D1 : 1N4148

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

- ZD1 : 5V1

**4. Metal film resistors**

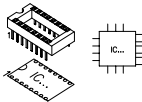
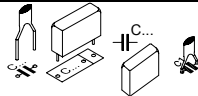
- R3 : 20K (2 - 0 - 0 - 2 - 1)
- R14 : 10K (1 - 0 - 0 - 2 - 1)

5. Resistors

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

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

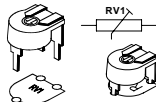
- IC1 : 14P

**7. Capacitors.**

- C1 : 15pF (15)
- C2 : 15pF (15)
- C3 : 100nF (104)
- C5 : 560pF (561)
- C6 : 10nF (103)
- C7 : 15nF (153)

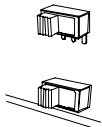
8. Resistor trimmer

- RV1 : 1K



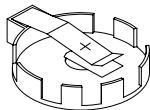
9. Slide switch.

SW1



10. Battery holder

E1



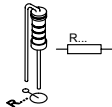
11. Transistors



Max. 8mm

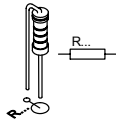
- T1 : BC547C
- T2 : BC547C
- T3 : BC557C

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)

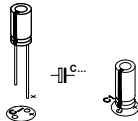
13. Vertical resistors



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

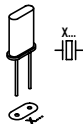
14. Electrolytic Capacitor. Watch the polarity !

C4 : 47µF

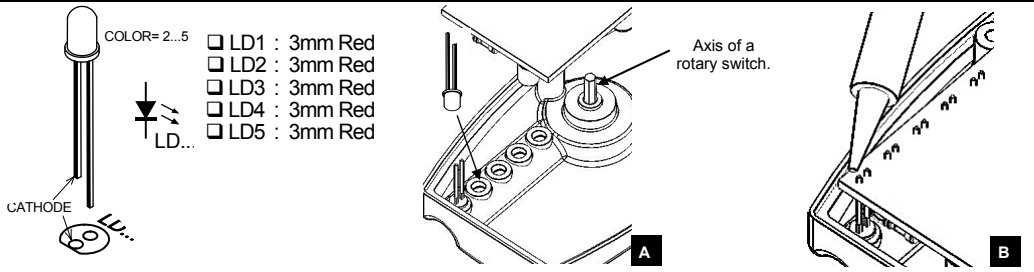


15. crystal

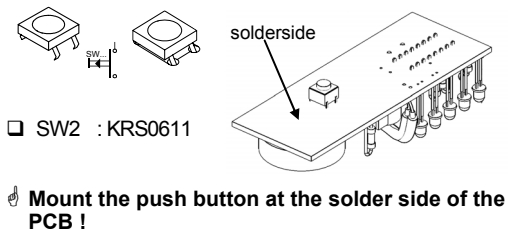
X1 : 20MHz



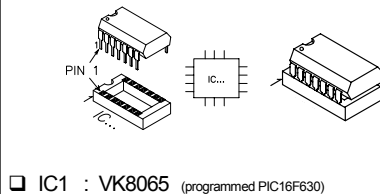
16. LEDs. Watch the polarity!



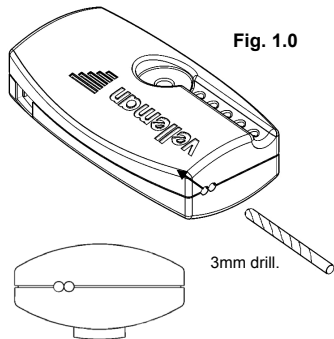
17. Push button.



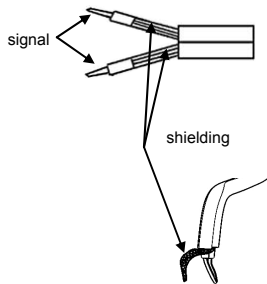
18. IC. Watch the position of the notch!



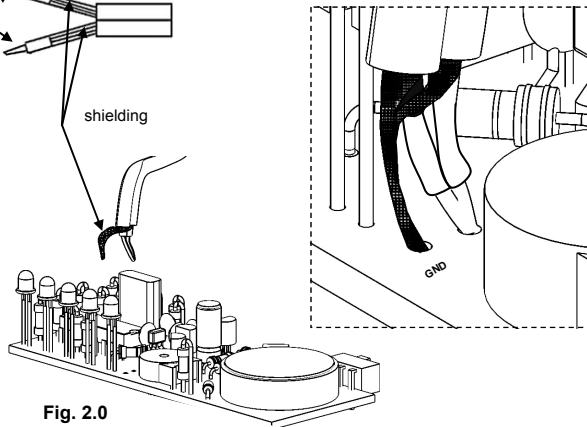
19. Assembly



- ❑ Close the enclosure with the 2 supplied screws.
- ❑ Drill two $\text{Ø}3\text{mm}$ 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.

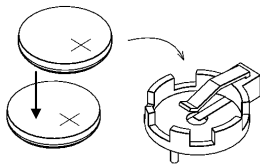


Fig. 3.0

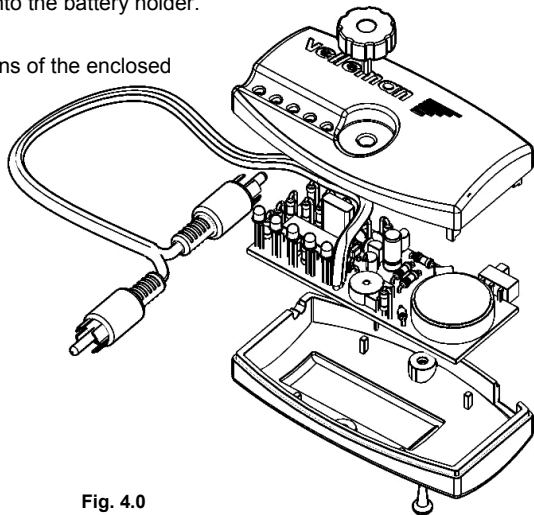
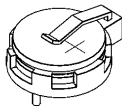


Fig. 4.0



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

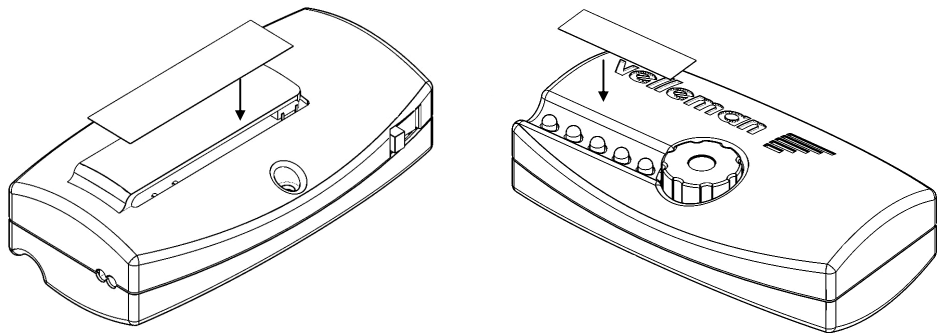
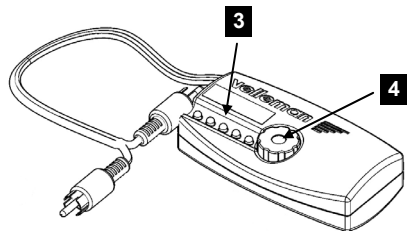
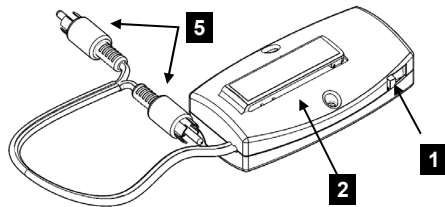


Fig. 5.0

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.

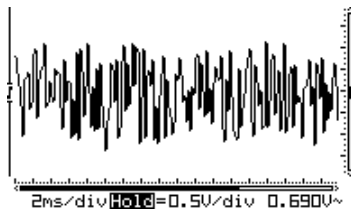
* Burst-mode: output: 20ms on, 500ms off (50Hz, 100Hz & 1KHz only)

Example : 100Hz burst signal :

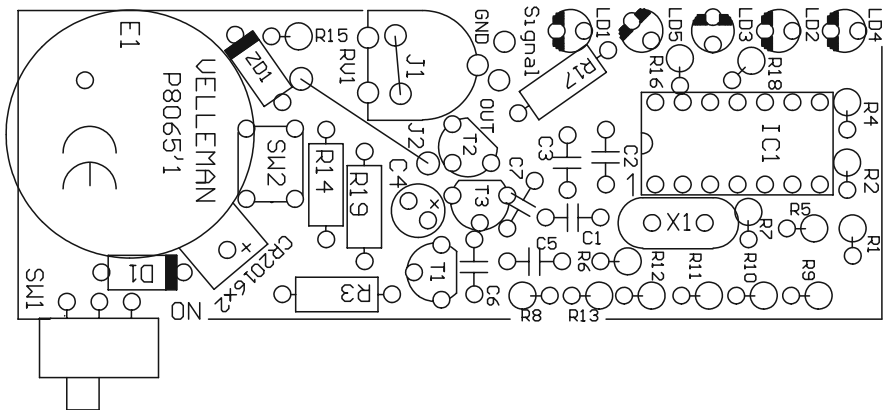


100Hz.

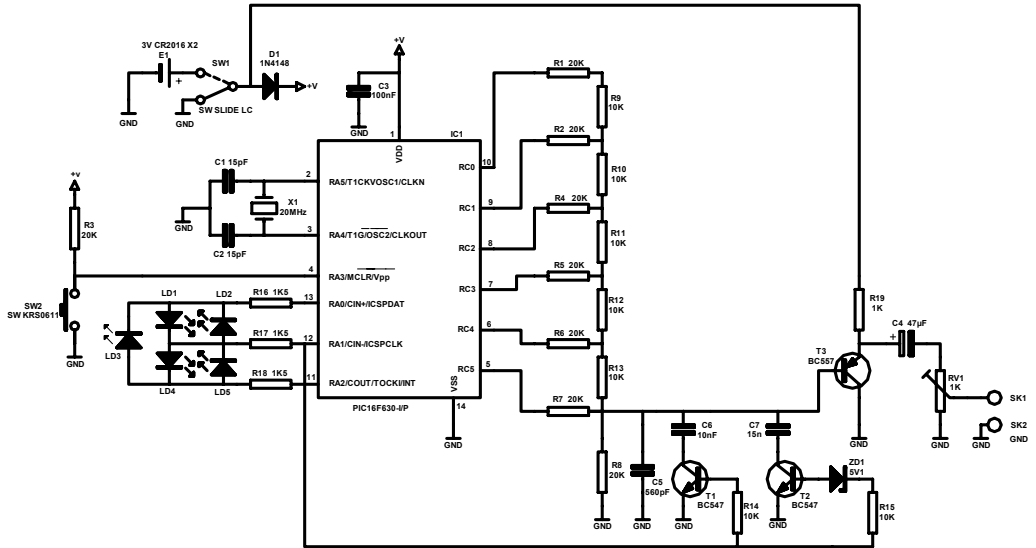
- 'Noise' mode : hold (2) and activate the device, then release button (2). The 'noise' mode is indicated by the two bottom LEDs.



Noise output

21. PCB layout.

22. Diagram





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