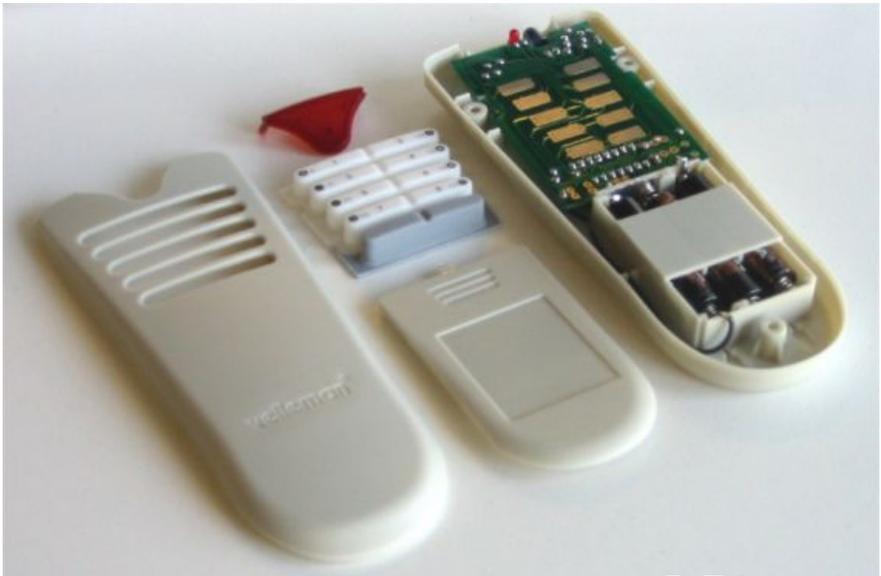# 15 Channel IR transmitter

Compatible with most Velleman IR receiver kits, 4 adresses allow the use of multiple receivers in one room.

Total solder points: 53
Difficulty level: *beginner* 1 ☐ 2 ☐ 3 ☒ 4 ☐ 5 ☐ *advanced*

K8049

Features:

- ☑ Works together with K6711, K6712, K6713, K8046, K8050, K4100, K4500, MK161, MK163, MK164, …
- ☑ 4 addresses allow the use of multiple receivers in one room
- ☑ Ergonomic design for extra comfort.
- ☑ LED function indication.
- ☑ Rubber keypad

Specifications:

- Power supply : 3 AAA batteries
- Up to 15 channels can be operated.
- Dimensions : 150 x 58 x 22mm / 5,9 x 2,3 x 0,86"

Schematic diagram.
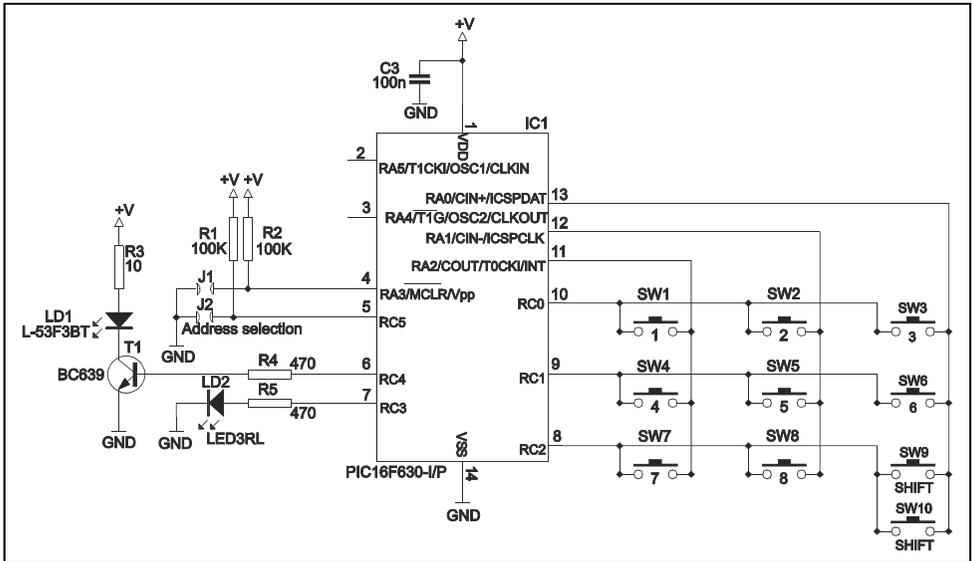
1. Assembly (Skipping this can lead to troubles !)
Ok, so we have your attention. These hints will help you to make this project successful. Read them carefully.

**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   l e a d s , 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.
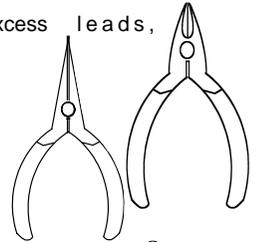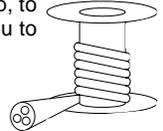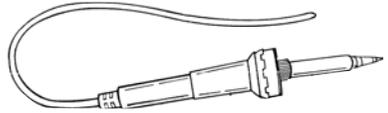
**For some projects, a basic multi-meter is required, or might be handy**
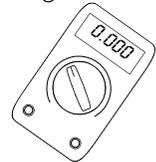
1.2 Assembly Hints :

⟹ 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.
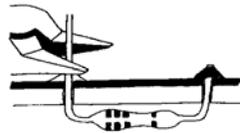
1.3 Soldering Hints :

1- Mount the component against the PCB surface and carefully solder the leads
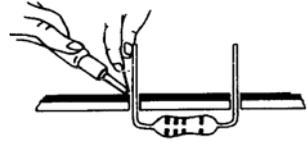
2- Make sure the solder joints are cone-shaped and shiny
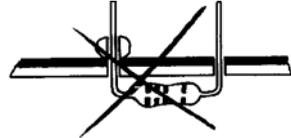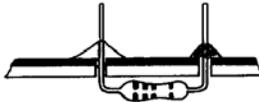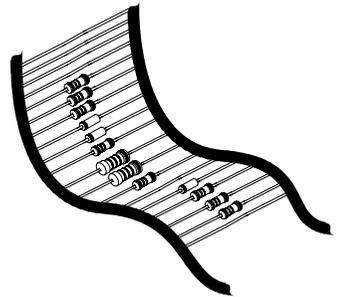
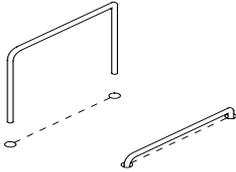**3-** Trim excess leads as close as possible to the solder joint

REMOVE THEM FROM THE TAPE ONE AT A TIME !

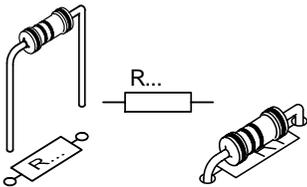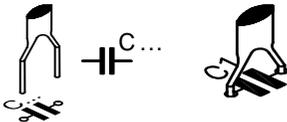**AXIAL COMPONENTS ARE TAPED IN THE CORRECT MOUNTING SEQUENCE !**

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1. Jumpers

- ❑ J1
- ❑ J2
- ❑ J3
- ❑ J4
- ❑ J5
- ❑ J6

2. 1/8W Resistors

R...
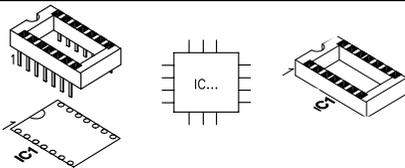
- ❑ R1 : 100K   (1-0-4-B)
- ❑ R2 : 100K   (1-0-4-B)
- ❑ R3 : 10   (1-0-0-B)
- ❑ R4 : 470   (4-7-1-B)
- ❑ R5 : 470   (4-7-1-B)

3. Ceramic Capacitor

C ...

- ❑ C3 : 100nF   (104, µ1)
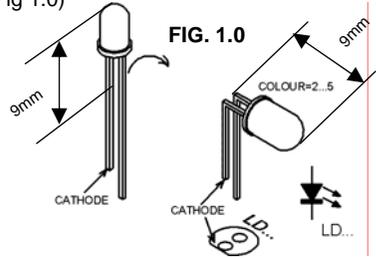
4. IC socket. Watch the position of the notch!

IC...

- ❑ IC1 : 14p

5. LEDs. Watch the polarity!

- ❑ LD2 : 3mm RED

First : Bend the leads exactly like the drawing. (Fig 1.0)

FIG. 1.0

9mm

9mm

COLOUR=2...5

CATHODE

CATHODE

LD...

LD...

Next : Mount this LED like in the drawing (fig. 2.0). Solder **one** lead, check the position, if necessary correct it by heating the soldering. **Last** solder the second connection.
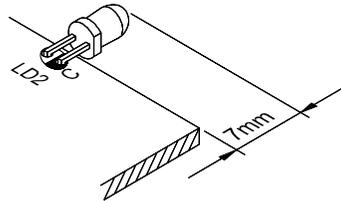

LD2

7mm

FIG. 2.0

Bend the LED exactly like the drawing (fig. 3.0).

FIG. 3.0

6. IR - LED. Watch the polarity!

- ❑ LD1

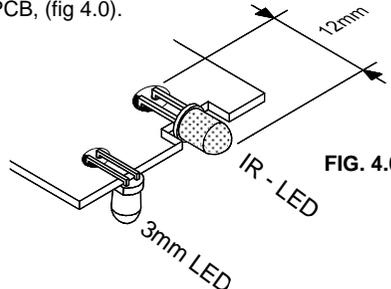Fit the IR LED horizontally and in line with the PCB, (fig 4.0).

12mm

IR - LED

3mm LED

FIG. 4.0

☝ **Pay attention to the polarity!**

7. Transistor

❑ T1   :   BC639

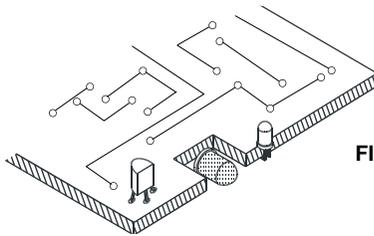☝ **Attention :** Mount the transistor on the solder side!

FIG. 5.0
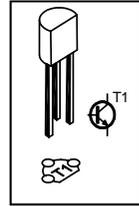
Now bend the transistor towards the pcb, away from the IR & 3mm LED.

FIG. 6.0

☝ Make sure the transistor connections do not contact any other parts of the circuit.

8. IC. Watch the position of the notch!

❑ IC1 : VK8049 programmed Pic16F630.

PIN 1

IC...

9. Battery contacts

❑   Solder a wire of 7cm (Ø 0,20mm)to the negative **(-)** connection of the PCB. The other end of the wire will be soldered to the negative battery contact later on.

FIG. 7.0

Solderside

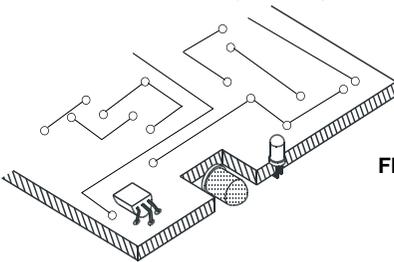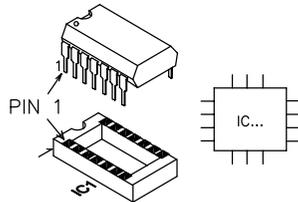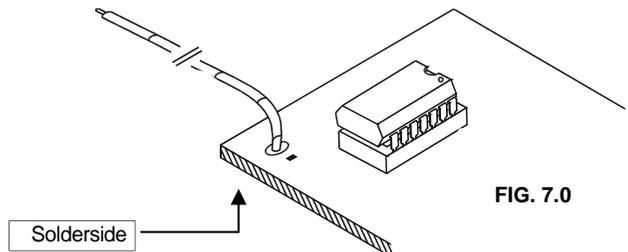❏   Now place the battery contacts into the housing on their right places.

❏ Positive battery lip **1**
❏ Common battery lip **2**
❏ Common battery lip **3**
❏ Negative battery lip **4**

FIG. 8.0
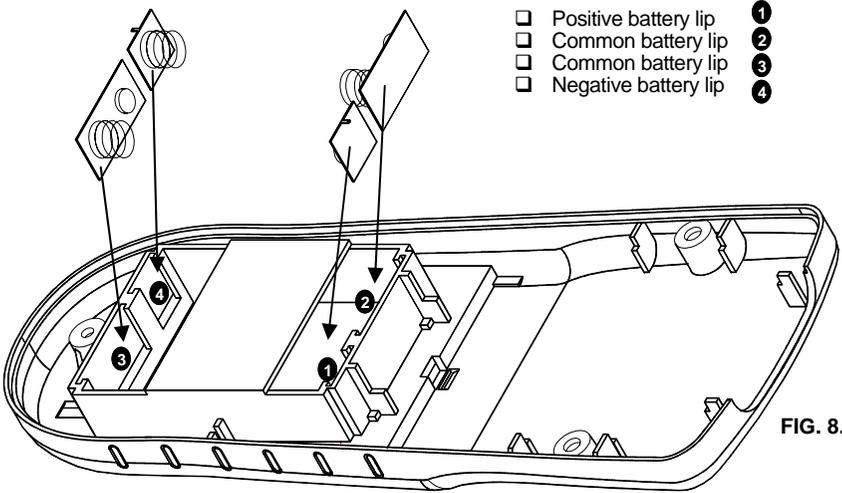
❏   Connect now the wire that you earlier have mount to the negative battery lip.

Negative battery lip

Positive battery lip
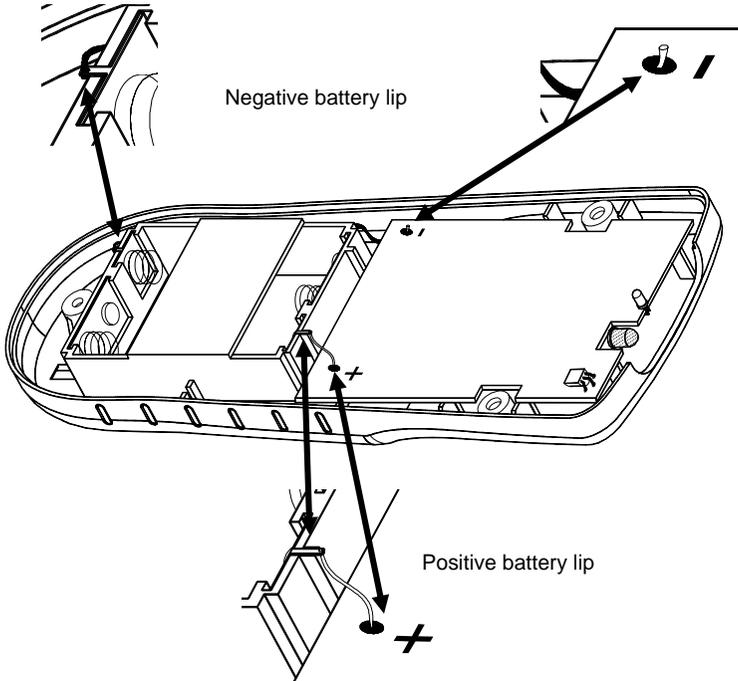
❏   Connect a jumper between the positive battery lip and positive connection on the pcb.

7

10. Assembly

❑ First bend the battery lips over before closing the enclosure.
❑ Close the enclosure with the supplied screws.

FIG. 9.0
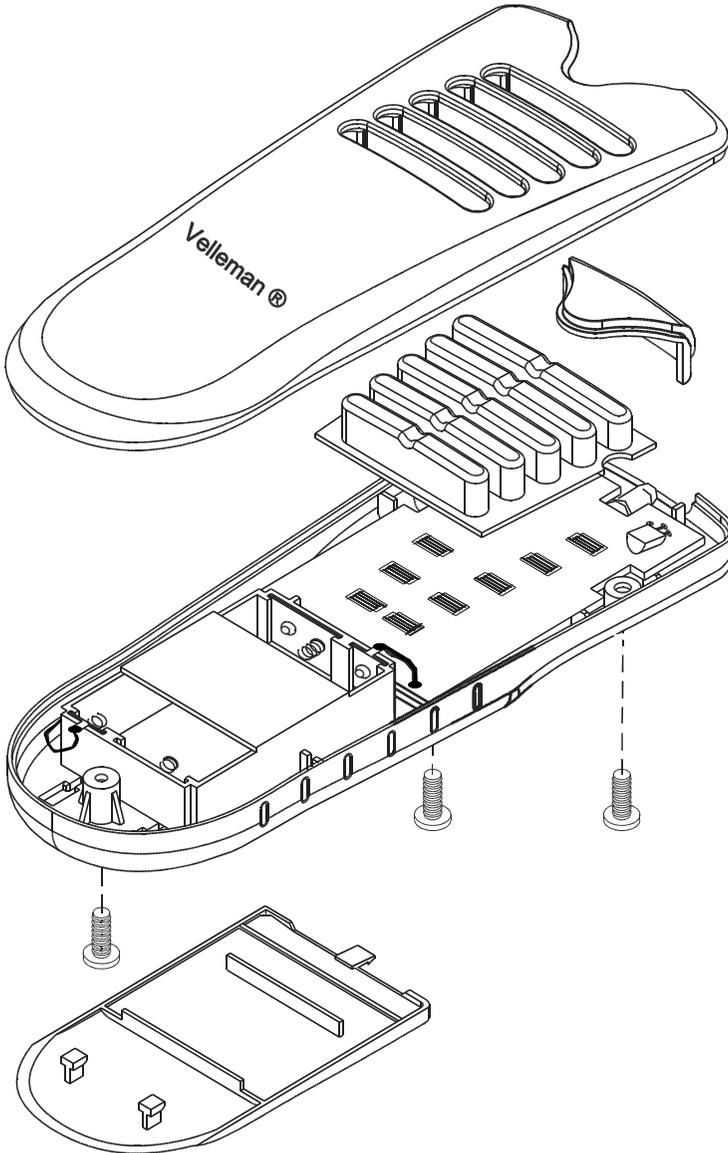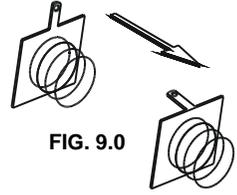
11. Keyboard Layout
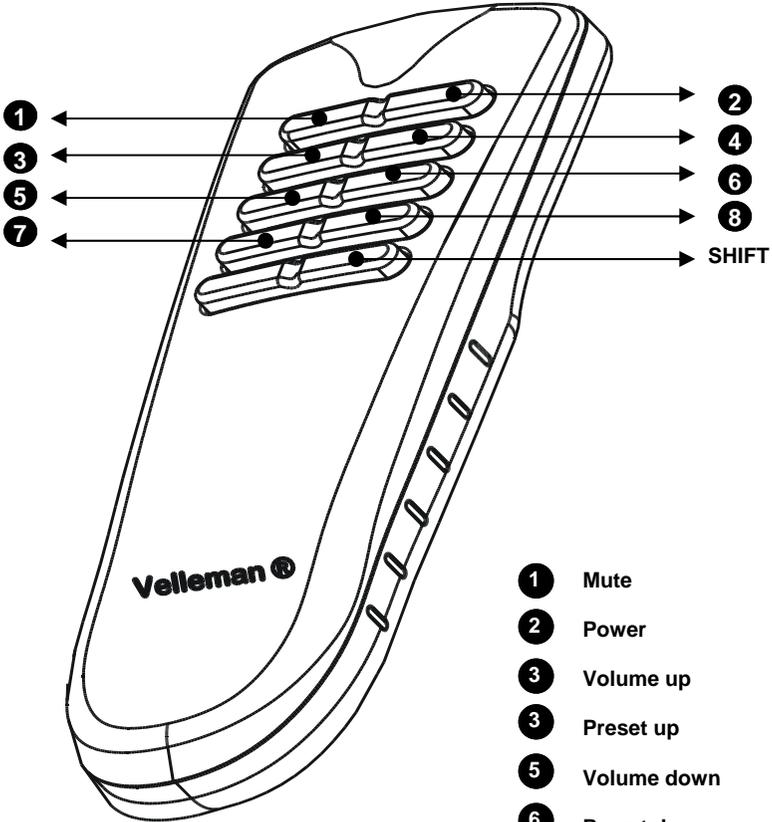
1 Mute

2 Power

3 Volume up

3 Preset up

5 Volume down

6 Preset down

7 Source

8 Tuner seek

SHIFT

Velleman ®
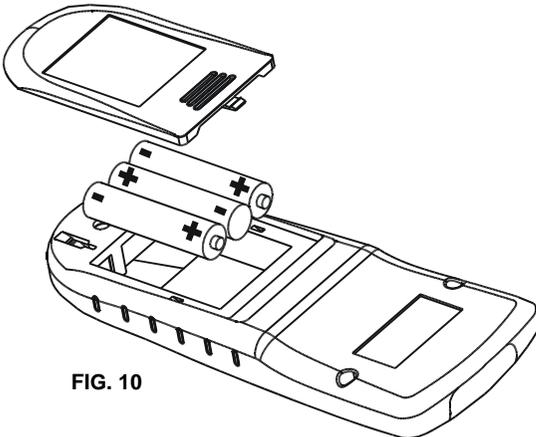
FIG. 10

Insert the batteries in the battery compartment as indicated in fig. 10 and close the compartment.

Remark : Respect your national and local laws when disposing of empty batteries.

12. Mode selection

At first power up, mode 1 is automatically selected.

- Press and hold SHIFT to change mode. Led starts flashing.
- Press button 1..8 to select desired mode as shown below.

✋ **Hint** : When the batteries are inserted, the led flashes 1..4 times indicating the selected mode.

| Key	Description
1	'K6710 emulation with **D4** mounted'- mode. Allows control of MK161/K8050/K6711/12/13. 15 channels available ('shift' & '8' = all clear). Shift is cleared after each key press.
2	'K6710 emulation with **D6** mounted'-mode. Allows control of MK161/K8050/K6712/13. 15 channels available ('shift' & '8' = all clear). Shift is cleared after each key press.
3	'K6710 emulation with **D5** mounted'-mode. Allows control of MK161/K8050/K6712/13. 15 channels available ('shift' & '8' = all clear). Shift is cleared after each key press.
4	Allows simultaneous control of K4100/K4500, MK163/MK164, MK161 and K8050/K6711/12/13
5	Identical to **1** but 'shift' is not cleared after each key press.
6	Identical to **2** but 'shift' is not cleared after each key press.
7	Identical to **3** but 'shift' is not cleared after each key press.
8	Identical to **4** but 'shift' is not cleared after each key press.

13. Use

To access channel 1..8 :

- Press button for channel 1..8.
- Holding the button will result in continuous transmission, led will flash indicating transmission.
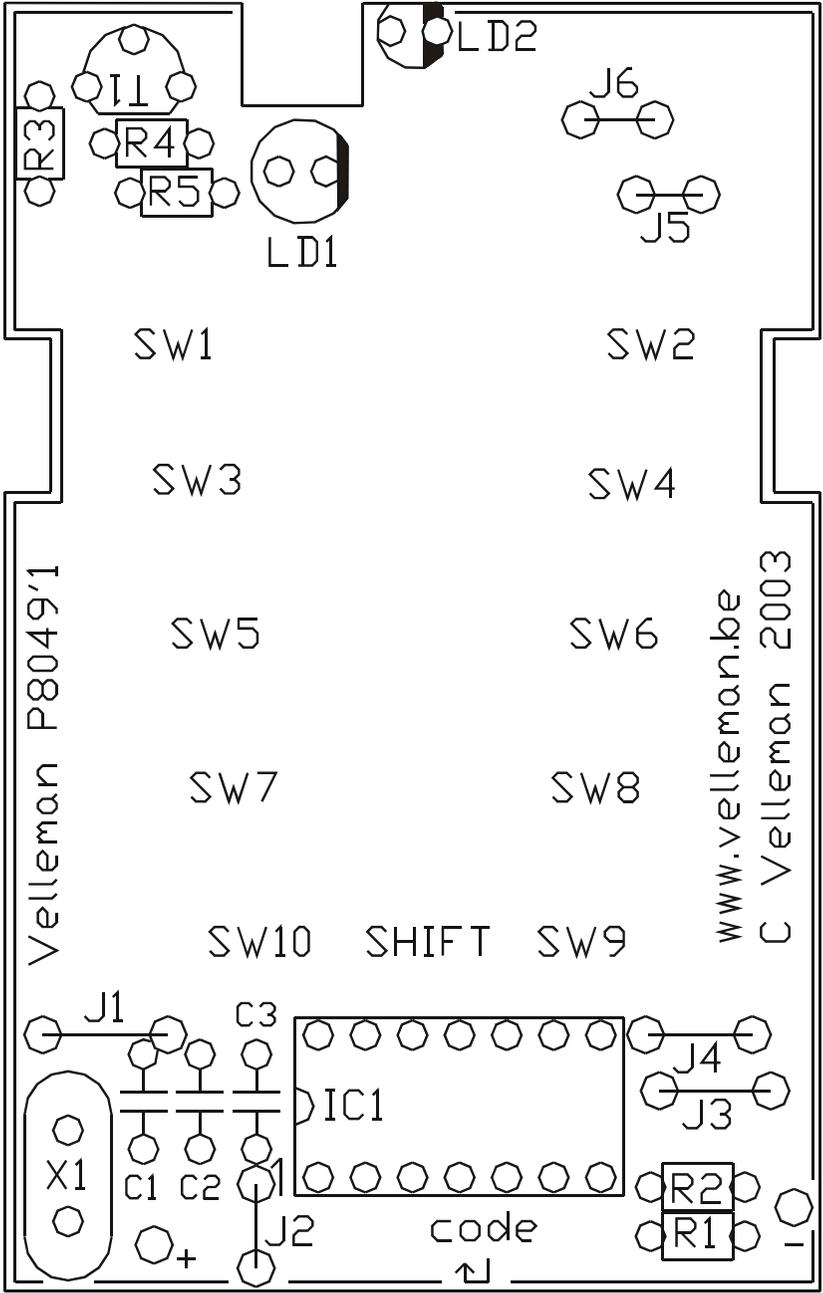
To access channel 9..16 :

- Briefly press 'shift'. Led will light indicating that 'shift' has been pressed.
- Press button 1..8 to access channel 9..16
- Holding the button will result in continuous transmission.

If no button is pressed after 'shift' has been pressed, the 'shift'-led will turn off in about 10s, hereby cancelling the 'shift'-selection.

Pressing 'shift' repeatedly toggles between shift-on and shift-off.

14. PCB layout.

LD2

J6

I1

R3 R4

R5

J5

LD1

SW1   SW2

SW3   SW4

Velleman P8049'1

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SW5   SW6

SW7   SW8

SW10 SHIFT SW9

J1   C3

X1

C1 C2

J2

IC1

code

J4
J3

R2
R1

+   _

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Belgium Europe
Info ?: http://www.velleman.be

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