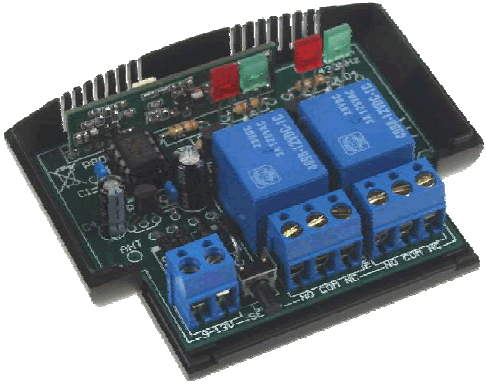
Total solder points: 89
Difficulty level: *beginner* 1 ☐ 2 ☐ 3 ☑ 4 ☐ 5 ☐ *advanced*

ONE CHANNEL DUAL OUTPUT RECEIVER

For use with K8058 / VM118R transmitters.



K8070

A single transmitter key-press activates two independent outputs.

A single transmitter key press activates two independent outputs. Each output can be configured as toggle, pulse or pulse with timer. This allows you to e.g. start two different timers, have a pulsed and a timed output, have two galvanically separated outputs etc.

Features:

- ☑ easy setup and transmitter 'learning', no jumper settings
- ☑ toggle or pulse function selectable per output
- ☑ pulse function can have turn-off timer
- ☑ up to 31 different transmitters or transmitter buttons can be stored
- ☑ 'All clear' function
- ☑ LED indicators for outputs and functions
- ☑ easy fixation
- ☑ for use with : K8058 / VM118R
- ☑ onboard antenna or external antenna

Specifications:

- power supply : 9 to 12V AC or DC / 100mA max.
- relay contact NO/NC : 3A
- 433MHz
- selectable timers per output : 0.5s, 5s, 30s, 1min, 5min, 15min, 30min and 60min
- open field range of up to 30m possible
- dimensions : 80 x 70 x 25mm / 3.15" x 2.75" x 0.98"

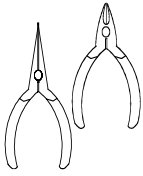
Velleman hereby certifies that the device K8070 meets the essential requirements and all other relevant stipulations of directive 1999/5/EG and 1995/5/EC.

For the complete conformity declaration check out :http://www.velleman.be/downloads/doc/ce_K8070.pdf

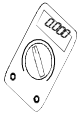
1. Assembly (Skipping this can lead to troubles !)
Ok, so we have your attention. These hints will help you to make this project successful. Read them carefully.

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



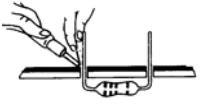
1.2 Assembly Hints :

⇒ 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 :

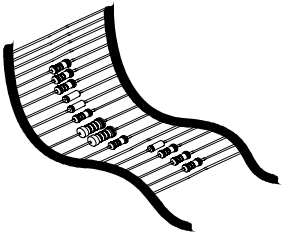
1- Mount the component against the PCB surface and carefully solder the leads



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

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

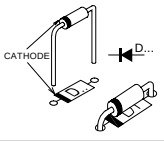
REMOVE THEM FROM THE TAPE ONE AT A TIME !



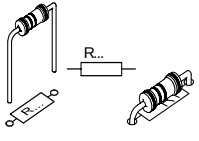
AXIAL COMPONENTS ARE TAPED IN THE CORRECT MOUNTING SEQUENCE !

1. Diodes. Watch the polarity!

- ❑ D1 : 1N4148
- ❑ D2 : 1N4148
- ❑ D3 : **1N4007**
- ❑ D4 : **1N4007**
- ❑ D5 : **1N4007**
- ❑ D6 : **1N4007**



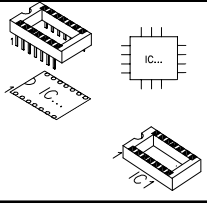
2. Resistors



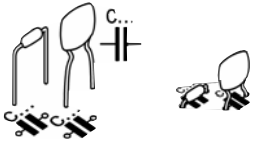
- ❑ R1 : 390 (3 - 9 - 1 - B)
- ❑ R2 : 390 (3 - 9 - 1 - B)
- ❑ R3 : 390 (3 - 9 - 1 - B)
- ❑ R4 : 390 (3 - 9 - 1 - B)
- ❑ R5 : 47K (4 - 7 - 3 - B)
- ❑ R6 : 47K (4 - 7 - 3 - B)
- ❑ R7 : 1M (1 - 0 - 5 - B)

3. IC sockets, Watch the position of the notch!

- ❑ IC1 : 8P



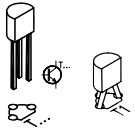
4. Capacitors



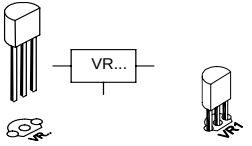
- ❑ C1 : 100nF (104, u1)
- ❑ C2 : 100nF (104, u1)

5. Transistors

- ❑ T1 : BC547
- ❑ T2 : BC547



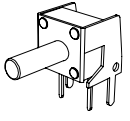
6. Voltage regulator



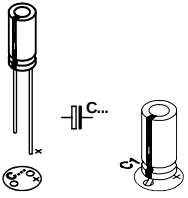
- ❑ VR1 : UA78L05

7. Push button

- ❑ SW1 : Select



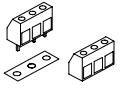
8. Electrolytic Capacitor. Watch the polarity !



- ❑ C4 : 10µF / 16V
- ❑ C5 : 100µF / 25V

9. Terminal blocks

- ❑ SK1 : 2P

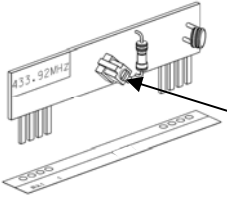


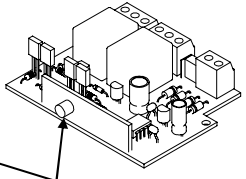
- ❑ SK2 : 3P
- ❑ SK3 : 3P

10. Receiver module

- ❑ RX1 : 433MHz.

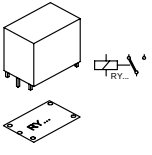
Watch the position of the module !!!





Remark: The receiver module coil is mounted away from the IC socket (see fig.).

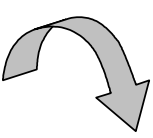
11. Relays / Relais / Relés

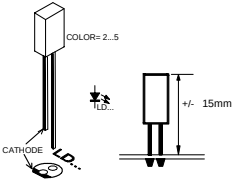


- ❑ RY1 : VR15M121C (12VDC - 3A - 1 c)
- ❑ RY2 : VR15M121C (12VDC - 3A - 1 c)

12. LEDs. *Watch the polarity !*

- ❑ LD1: 5mm Red (rectangular)
- ❑ LD2: 5mm Green (rectangular)
- ❑ LD3: 5mm Green (rectangular)
- ❑ LD4: 5mm Red (rectangular)





Mount the LEDs according to fig. 1.0

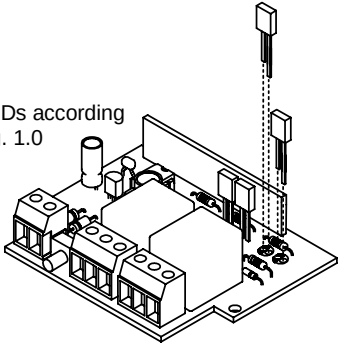


FIG 1.0

Mount the PCB with the solder side facing upwards.

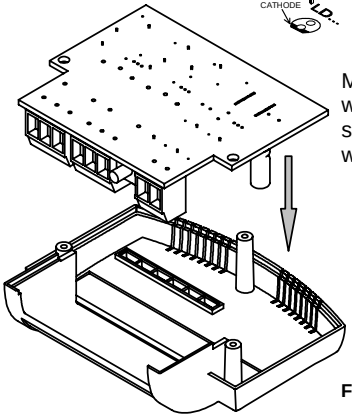


FIG 2.0

Position the LEDs and solder them.

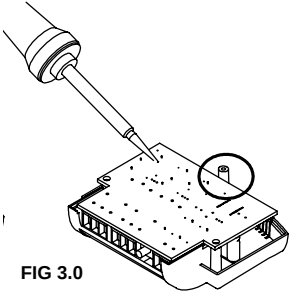
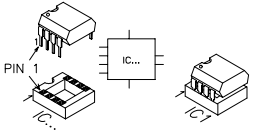


FIG 3.0

NOK **NOK** **OK**

13. IC. Watch the position of the notch!

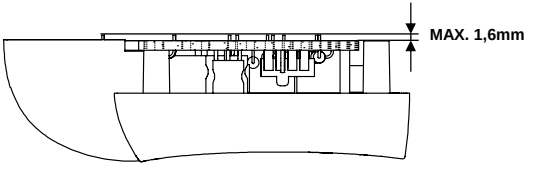


❑ IC1 :VK8070 (Programmed PIC12F629)

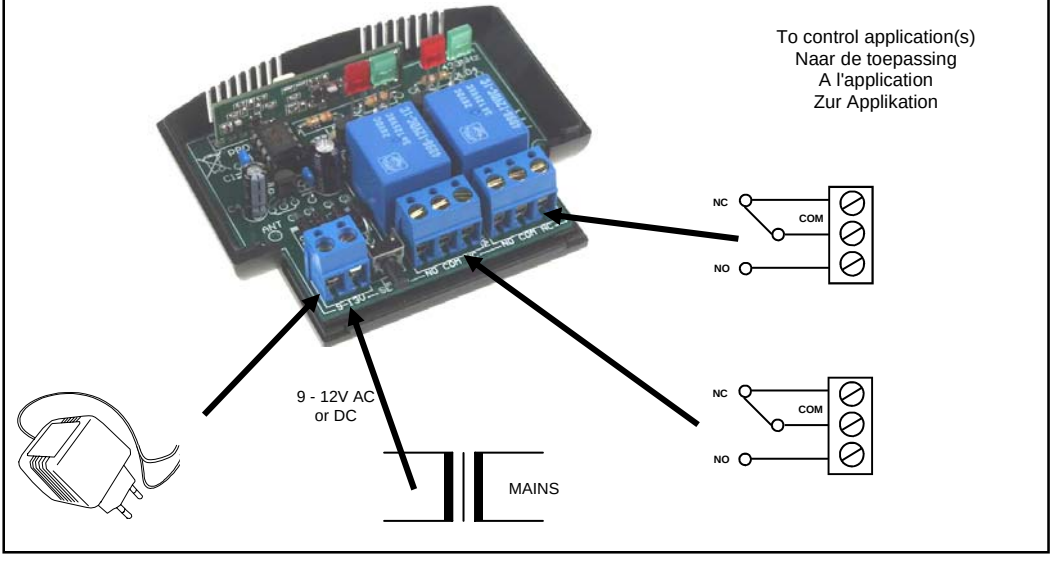
14. Antenna

Solder a 30cm / 0.5mm^2 wire (option) for an improved reception quality.

Make sure that all soldered connections are not longer then 1,6mm on the soldered side.



15. Connection



16. Mounting order overview

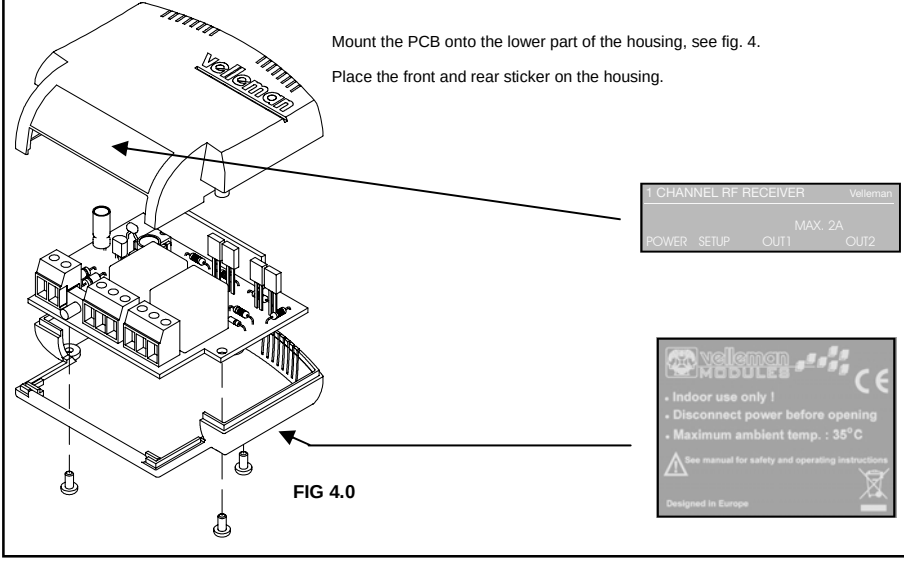


FIG 4.0

Mount the PCB onto the lower part of the housing, see fig. 4.

Place the front and rear sticker on the housing.

17. Configuration

At power-on, LD1 will flash a # of times, hereby indicating that the unit is operational. Next, LD4 will turn-on.
At first power-on, the unit will respond to channel(1)/button(1) of the K8058/VM118R transmitter. Make sure the transmitter buttons are configured as 'pulse' (check your K8058/VM118R manual).

18. To learn a remote(button):

1. Hold 'setup'-button. LD1 turns on.
2. Hold a remote button (1..8)
3. LD4 will light when the button has been stored
4. Release all buttons

Repeat steps 1 trough 4 to learn other remote buttons or remotes.

☝ 31 transmitters or transmitter-buttons can be stored.

☝ If the memory is full, both LD1 and LD4 will flash rapidly.

19. To remove all stored remotes from memory and to return to factory defaults

1. Turn off the power.
2. Hold 'setup'-button.
3. Turn on power. LD1 and LD4 will start flashing
4. Release 'setup' when LD1 and LD4 stop flashing

☝ This process takes about 10 seconds.

☝ If the button is released before the leds stop flashing, the memory will not be cleared.

☝ The unit will now respond to the default code only.

20. Configuration of left and right relay output

1. Push 'setup'-button repeatedly to configure either left relay (LD2 lights) or right relay (LD3 lights).
2. Confirm your selection with a long push (LD4 flashes 3 times). The selected relay will remain ON.
3. Push 'setup'-button a number of times, depending on the desired mode (see table). At each press, LD1 will flash a # of times, indicating the current mode.
4. Confirm with a long push (LD4 flashes 3 times). The selected relay will turn off and the unit is ready for use.

☝ The unit will return to normal operation when left idle for 10s. The current mode will not be changed.

If necessary, repeat sequence for the remaining channel.

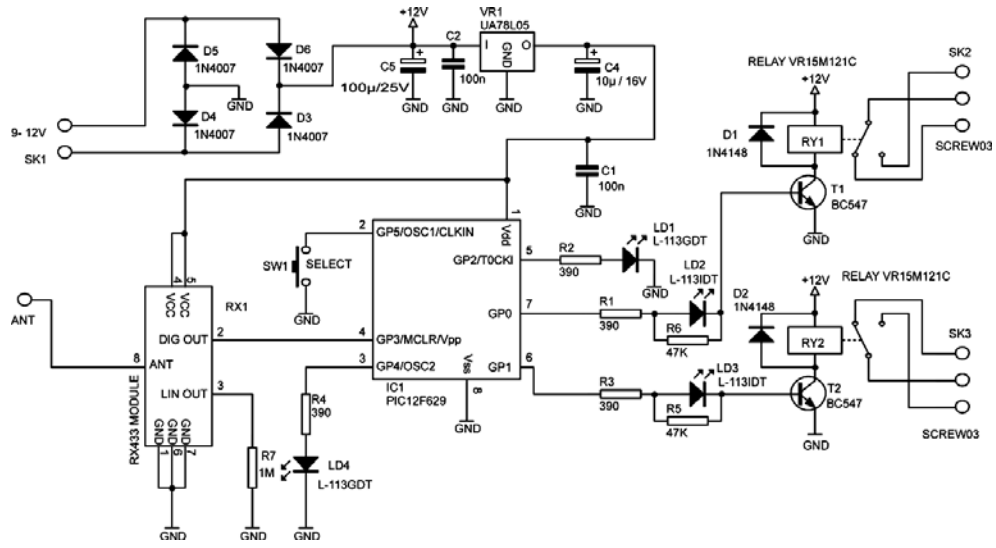
Factory defaults: left relay-output: 0.5s timer right relay-output: 1h timer

flashes	Mode
1	ON/OFF
2	0.5s timer
3	5s timer
4	30s timer
5	1min timer
6	5min timer
7	15min timer
8	30min timer
9	1h timer

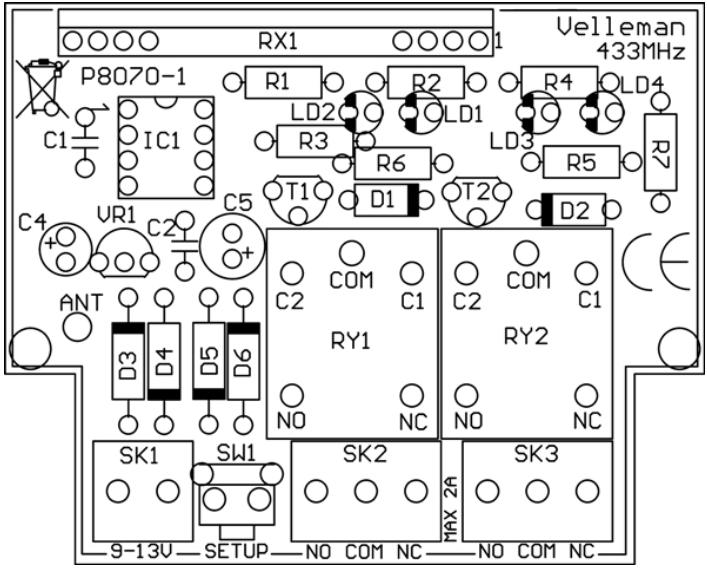
21. Use

Pressing a transmitter button will operate both outputs simultaniously.
Each relay will behave according to the selected mode.
In '0.5s timer'-mode, the relay will remain on for as long as the remote button is held.
In 'ON/OFF'-mode, the relay will toggle between ON and OFF every time the remote button is pushed.

22. Schematic diagram.



23. PCB


RX1
1
Velleman
433MHz
P8070-1
R1
R2
R4
LD4
LD2
LD1
LD3
C1
IC1
R3
R6
R5
R7
T1
D1
T2
D2
C4
VR1
C2
C5
COM
C2
C1
COM
C2
C1
ANT
D3
D4
D5
D6
RY1
RY2
NO
NC
NO
NC
SK1
SW1
SK2
SK3
MAX 2A
9-13V
SETUP
NO COM NC
NO COM NC

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