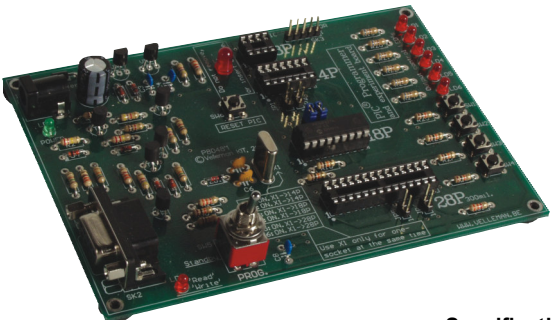
Total solder points: 274
Difficulty level: *beginner* 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☑ *advanced*

velleman® HIGH-Q -kit

PIC® PROGRAMMER AND EXPERIMENT BOARD

K8048



Suitable for programming Microchip® Flash PIC ™ microcontrollers.

☝ **Basic programming knowledge is required**

Specifications

- Suitable for programming Microchip® FLASH PIC(tm) microcontrollers
- Supports 4 different 300 mil. PICs: 8p, 14p, 18p and 28p
- Power supply: 12 or 15V DC, min. 300mA, non-regulated adapter
- Dimensions: 145 x 100mm (5.75" x 4")

This device complies with Part 15 of the FCC Rules provided the enclosed instructions are followed to the letter. Use of the device is subject to the following conditions: (1) this device must not cause harmful interference and (2) the operation of this device should not be influenced by unwanted interference.

More information about FCC can be look at ***http://www.fcc.gov***

FR	Vous trouverez la traduction de cette notice sur le CD, avec d'autres informations
NL	Vertaling van deze handleiding, als ook meer gegevens kan men terugvinden op de CD.
UK	The translation of this manual and all other information can be found on the CD.
D	Dieübersetzung dieser anleitung und alle anderen Informationen finden Sie auf der CD.
S	Svensk Bruksanvisning och annan information finns på medföljande CD.
SF	Tämän käyttöohjeen sekä muun informaation suomenkielinen käännös on oheisella CD:llä.
I	La traduzione di questo manuale e tutte le informazioni concernenti l'unità possono essere trovate sul CD.
DK	Oversættelsen af denne manual, samt alle øvrige informationer vedrørende enhederne, kan findes på CD'en.
SP	La traducción de este manual de instrucciones y toda otra información sobre los dispositivos se encuentran en el CD
P	A tradução deste Manual e toda a informação referente às unidades pode ser encontrada no CD

Features:

- ☑ Suitable for programming Microchip® FLASH PIC(tm) microcontrollers
- ☑ Supports 4 different 300 mil. PICs: 8p, 14p, 18p and 28p
- ☑ Test buttons and LED indicators to carry out educational experiments, such as the enclosed programming examples
- ☑ Easy connection to a PC through the serial port
- ☑ Enclosed is a Flash Microcontroller (PIC16F627) that can be reprogrammed up to 1000 times for experimenting at will
- ☑ Software to compile and program your source code is included

Specifications:

- Power supply: 12 or 15V DC, min. 300mA, non-regulated adapter (PS1205/PS1208/PS1508 5230Vac); PS1208USA (115Vac))
- Rev 2.5 supports the following microcontrollers:
  - PIC12F629, PIC12F675
  - PIC16C83, PIC16CR83, PIC16F83, PIC16C84, PIC16CR84,PIC16F84, PIC16F84A
  - PIC16F870, PIC16F871, PIC16F872, PIC16F873, PIC16F873A, PIC16F874, PIC16F874A, PIC16F876, PIC16F876A, PIC16F877(A)(ICSP only)
  - PIC16F627, PIC16F627A, PIC16F628, PIC16F628A, PIC16F648A
  - PICF630, PIC16F676
  - PIC16F818, PIC16F819
- Dimensions: 145 x 100mm (5.75" x 4")

Minimum system requirements:

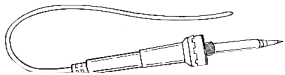
- IBM Compatible PC, Pentium or better
- Windows™ 95/98/ME/NT/2000/XP
- CDROM
- free serial RS232 port

☝ **Important : not compatible with USB to serial (RS232) convertor !**

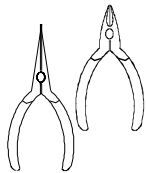
1. Assembly (Skipping this can lead to troubles !)

Ok, so we have your attention. These hints will help you to make this project successful. Read them carefully.

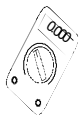
1.1 Make sure you have the right tools:



- 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



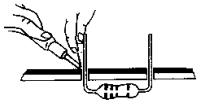
1.2 Assembly Hints :

⇒ 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

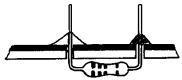
* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as 'NOTE' on a separate leaflet.

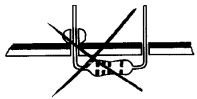
1.3 Soldering Hints :

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

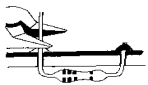


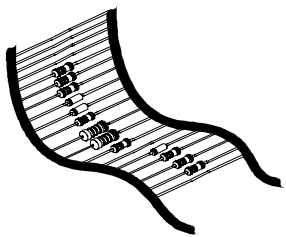
2- Make sure the solder joints are cone-shaped and shiny





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



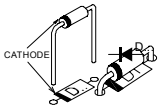


DO NOT BLINDLY FOLLOW THE ORDER OF THE COMPONENTS ONTO THE TAPE. ALWAYS CHECK THEIR VALUE ON THE PARTS LIST!

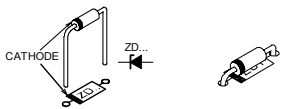
REMOVE THEM FROM THE TAPE ONE AT A TIME !

1. Diodes. Watch the polarity!

- ❑ D1 : **1N4007**
- ❑ D2 : 1N4148
- ❑ D3 : 1N4148
- ❑ D4 : 1N4148
- ❑ D5 : 1N4148
- ❑ D6 : 1N4148
- ❑ D7 : 1N4148

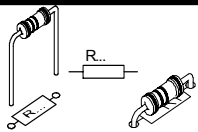


2. Zenerdiodes. Watch the polarity!



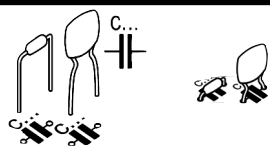
- ❑ ZD1 : 8V2

3. Resistors



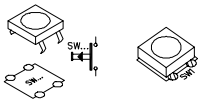
- ❑ R1 : 15K (1 - 5 - 3 - B)
- ❑ R2 : 220K (2 - 2 - 4 - B)
- ❑ R3 : 4K7 (4 - 7 - 2 - B)
- ❑ R4 : 1K (1 - 0 - 2 - B)
- ❑ R5 : 15K (1 - 5 - 3 - B)
- ❑ R6 : 220K (2 - 2 - 4 - B)
- ❑ R7 : 4K7 (4 - 7 - 2 - B)
- ❑ R8 : 1K (1 - 0 - 2 - B)
- ❑ R9 : 4K7 (4 - 7 - 2 - B)
- ❑ R10 : 3K3 (3 - 3 - 2 - B)
- ❑ R11 : 4K7 (4 - 7 - 2 - B)
- ❑ R12 : 330 (3 - 3 - 1 - B)
- ❑ R13 : 15K (1 - 5 - 3 - B)
- ❑ R14 : 1K (1 - 0 - 2 - B)
- ❑ R15 : 3K3 (3 - 3 - 2 - B)
- ❑ R16 : 1K (1 - 0 - 2 - B)
- ❑ R17 : 10K (1 - 0 - 3 - B)
- ❑ R18 : 10K (1 - 0 - 3 - B)
- ❑ R19 : 680 (6 - 8 - 1 - B)
- ❑ R20 : 680 (6 - 8 - 1 - B)
- ❑ R21 : 680 (6 - 8 - 1 - B)
- ❑ R22 : 680 (6 - 8 - 1 - B)
- ❑ R23 : 680 (6 - 8 - 1 - B)
- ❑ R24 : 680 (6 - 8 - 1 - B)
- ❑ R25 : 10K (1 - 0 - 3 - B)
- ❑ R26 : 10K (1 - 0 - 3 - B)
- ❑ R27 : 10K (1 - 0 - 3 - B)
- ❑ R28 : 10K (1 - 0 - 3 - B)
- ❑ R29 : 1K (1 - 0 - 2 - B)
- ❑ R30 : 10K (1 - 0 - 3 - B)
- ❑ R31 : 3K3 (3 - 3 - 2 - B)

4. Capacitors



- ❑ C2 : 100nF (104, u1)
- ❑ C3 : 100nF (104, u1)
- ❑ C4 : 100nF (104, u1)
- ❑ C6 : 18pF (18)
- ❑ C7 : 18pF (18)
- ❑ C8 : 100nF (104, u1)

5. Push buttons

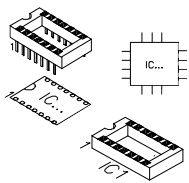


- ❑ SW1
- ❑ SW2
- ❑ SW3
- ❑ SW4
- ❑ SW6

KRS0611

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

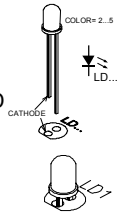
- ❑ IC1 : 8P
- ❑ IC2 : 14P
- ❑ IC3 : 18P
- ❑ IC4 : 28P



7. LEDs. *Watch the polarity !*

- ❑ LD1 : 3mm
- ❑ LD2 : 3mm
- ❑ LD3 : 3mm
- ❑ LD4 : 3mm
- ❑ LD5: 3mm
- ❑ LD6 : 3mm
- ❑ LD8 : 3mm

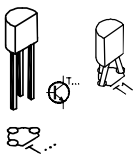
RED



- ❑ LD7 : 3mm GREEN

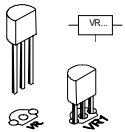
8. Transistors.

- ❑ T1 : BC547
- ❑ T2 : BC547
- ❑ T3 : **BC557**
- ❑ T4 : BC547
- ❑ T5 : BC547

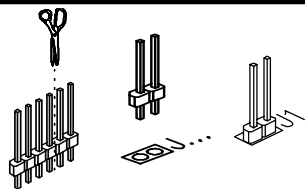


9. Voltage regulator

- ❑ VR1 : UA78L12
- ❑ VR2 : **UA78L05**

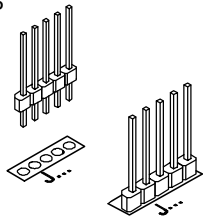


10. Header

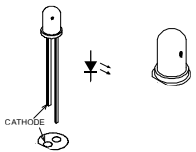


- ❑ JP1 : 2P
- ❑ JP2 : 2P
- ❑ JP3 : 2P
- ❑ JP4 : 2P
- ❑ JP5 : 2P
- ❑ JP6 : 2P

❑ SK3 : 5P

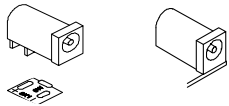


11. Blinking LED. Watch the polarity!



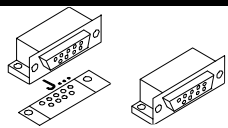
❑ LD9 : Blinking red (5mm)

12. DC - Jack



❑ SK1 : 15VDC (Power)

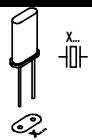
13. Sub D - connector



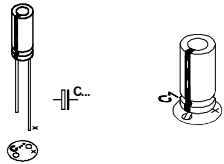
❑ SK2 : RS232 (9p female)

14. Quartz crystal

❑ X1 : 4MHz

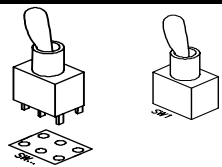


15. Electrolytic Capacitor. Watch the polarity !



❑ C1 : 220µF

16. Switch



❑ SW5 : 3 pos. / 2 pole

ON - OFF - ON

Run / Standby / Prog)

17. Rubber feet

Mount the rubber feet on the solder side of the PCB, see fig 1.0.

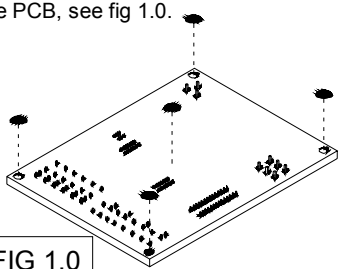
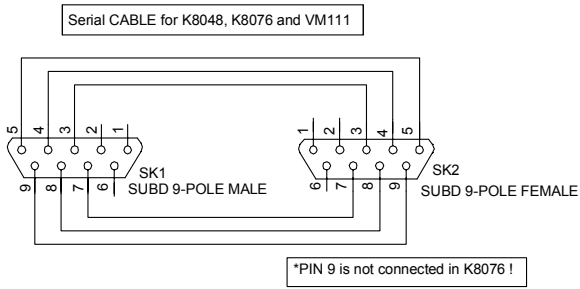


FIG 1.0

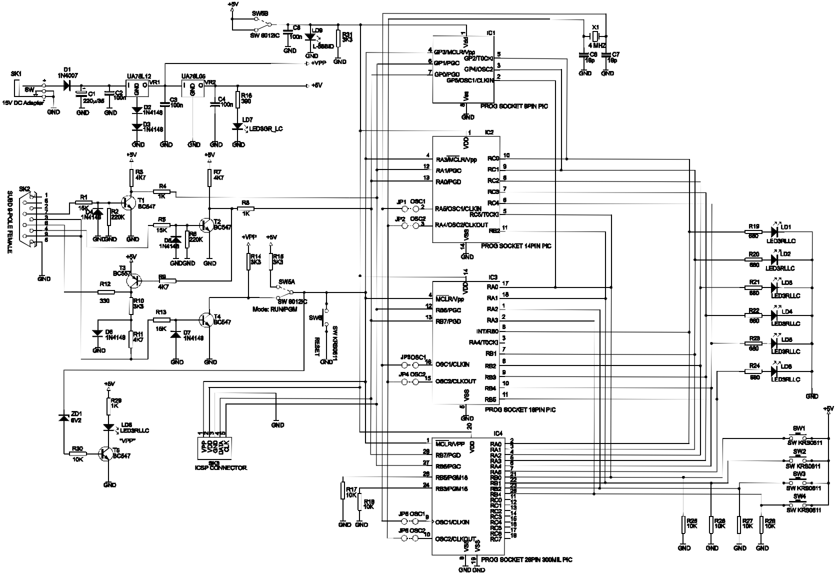
18. Serial cable



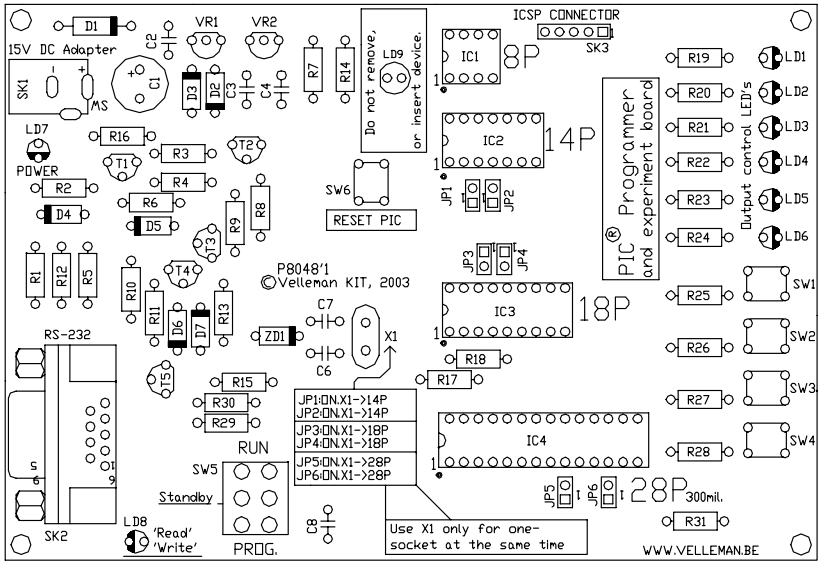
19. Software installation

- Place the Velleman® software CD in your CD-ROM player.
- Select 'Browse through this CD for other Velleman software' (this message will not be displayed on your screen if 'AUTORUN' is not activated.
- Select the right folder on the CD with Windows Explorer).
- Select the 'Velleman Kits' folder. Select the 'K8048' folder.
- Run the 'INSTALL_K8048.EXE' program in the '\Velleman kits\K8048\' folder.
- Follow the indications on the screen until all files are installed.

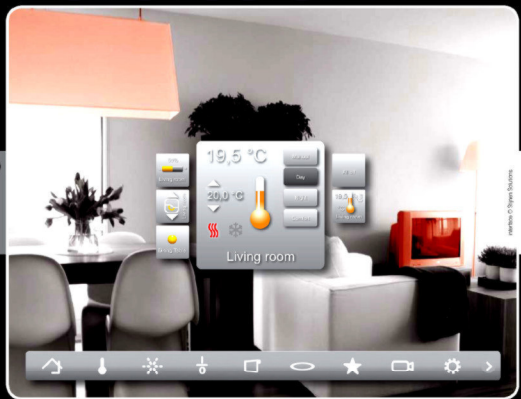
20. Schematic diagram.



21. PCB


D1
15V DC Adapter
SK1
MS
C1
C2
VR1
VR2
D3
D2
C3
C4
R7
R14
LD9
Do not remove, or insert device.
ICSP CONNECTOR
SK3
IC1
8P
IC2
14P
JP1
JP2
SW6
RESET PIC
R19
R20
R21
R22
R23
R24
LD1
LD2
LD3
LD4
LD5
LD6
Output control LED's
PIC® Programmer and experiment board
LD7
POWER
R16
R3
T1
T2
R2
R4
R6
D4
D5
R9
R8
T3
R1
R12
R5
R10
T4
R11
D6
D7
R13
P8048'1
©Velleman KIT, 2003
C7
ZD1
X1
C6
JP3
JP4
IC3
18P
R18
R17
SW1
SW2
SW3
SW4
R25
R26
R27
R28
RS-232
T5
R15
R30
R29
JP1:ON.X1->14P
JP2:ON.X1->14P
JP3:ON.X1->18P
JP4:ON.X1->18P
JP5:ON.X1->28P
JP6:ON.X1->28P
IC4
JP5
JP6
28P 300mil.
R31
SK2
LD8
'Read'
'Write'
SW5
RUN
Standby
PROG.
C8
Use X1 only for one-socket at the same time
WWW.VELLEMAN.BE

DOMOTIC SYSTEM



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