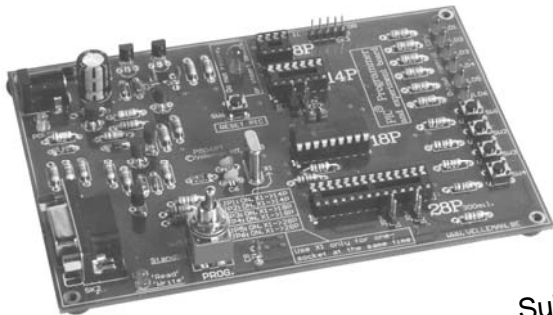


Total solder points: 274

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

## PIC<sup>®</sup> programmer and experiment board



# K8048

Suitable for programming Microchip<sup>®</sup>  
Flash PIC<sup>™</sup> microcontrollers.

👉 **Basic programming knowledge  
is required**

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
  - ✔ PIC16F630, 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

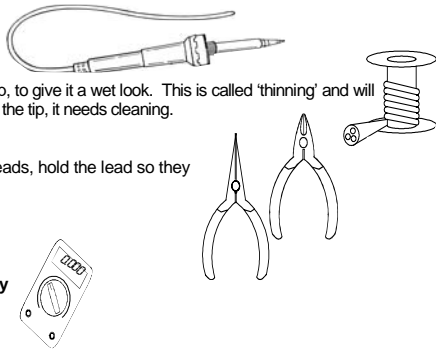
 **Important : not compatible with USB to serial (RS232) convertor !**

### 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**

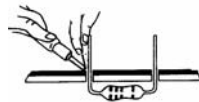
#### 1.2 Assembly Hints :

- ⇒ 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

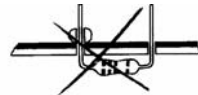
\* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as 'NOTE' on a separate leaflet.

### 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

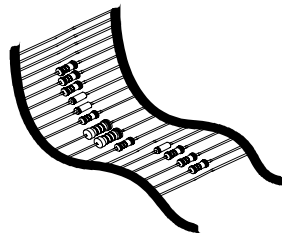


3- Trim excess leads as close as possible to the solder joint



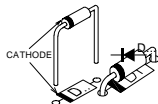
REMOVE THEM FROM THE TAPE ONE AT A TIME !

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



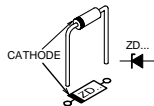
## 1. Diodes. Watch the polarity!

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

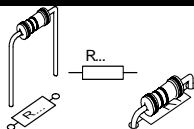


## 2. Zenerdiodes. Watch the polarity!

- ZD1 : 8V2



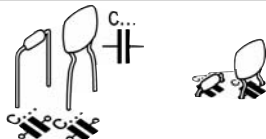
## 3. Resistors



- 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

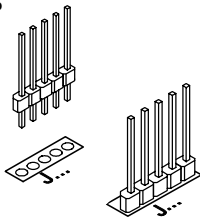
### 9. Voltage regulator

- VR1 : UA78L12
- VR2 : UA78L05

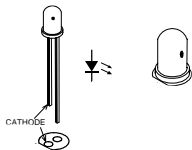
### 10. Header

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

□ SK3 : 5P

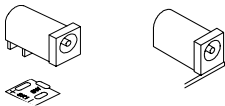


**11. Blinking LED. Watch the polarity!**



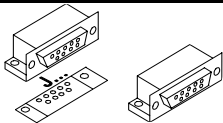
□ LD9 : Blinking red (5mm)

**12. DC - Jack**



□ SK1 : 15VDC (Power)

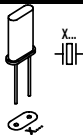
**13. Sub D - connector**



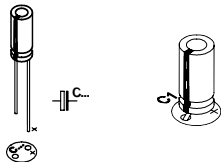
□ SK2 : RS232 (9p female)

**14. Quartz crystal**

□ X1 : 4MHz

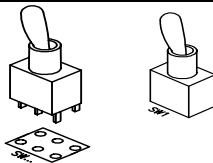


**15. Electrolytic Capacitor. Watch the polarity !**



□ 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.

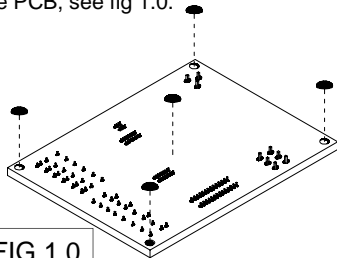
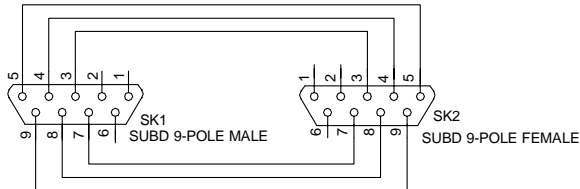


FIG 1.0

## 18. Serial cable

Serial CABLE for K8048, K8076 and VM111

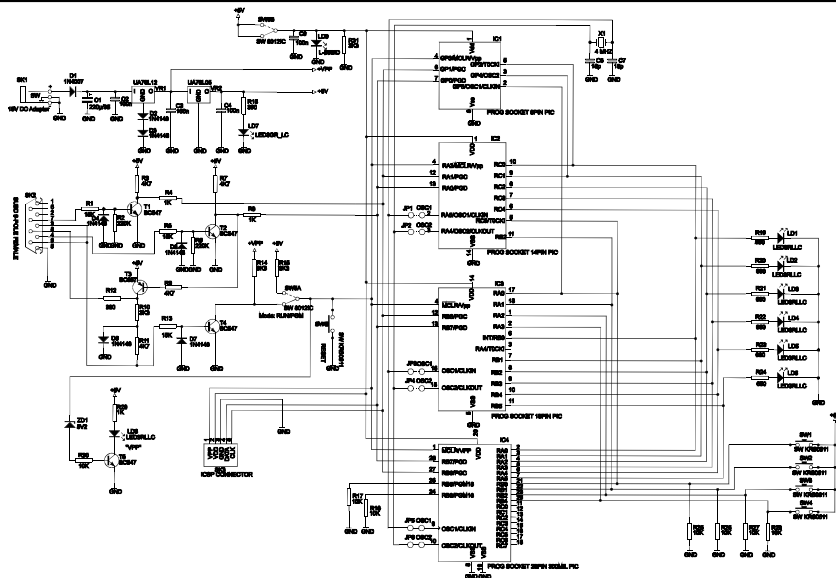


\*PIN 9 is not connected in K8076 !

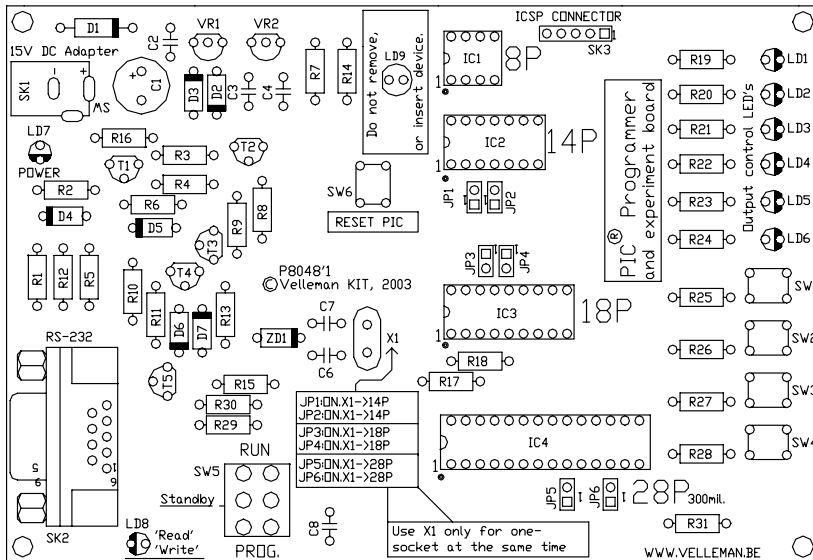
## 19. Software installation

- 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





Modifications and typographical errors reserved  
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H8048IP - 2004 - ED1 (rev. 4.0)

