

PIC16F84A PROGRAMMER & EXPERIMENTER (Order Code 3081)

January, 2008. There is completely new **software** and **documentation** for Kit 3081. The hardware remains the same. Over the last couple of years the old documentation became out of date as new PIC chips were released and software and operating systems progressed. And the old DOS-based software was itself a difficult thing for Windows-raised people to learn.

Now we provide

- easy to use Windows 3.1x/9x/NT/2000/ME/XP programming software (qel3081.exe)
- 4 detailed code examples
- a 49 page Tutorial Manual (pdf)

And we introduce the MPLAB program from Microchip to do program development and assembly.

The Kit connects to the parallel port of a PC. You program the 16F84A using the software provided, then move the programmed 16F84A IC from the IC4 socket to the TEST CIRCUIT IC socket. When you reconnect power the 5 LEDs should flash in the pattern you programmed.

Thus we guarantee that your first programming efforts are successful. We provide the fully commented source code for 4 program which flash the LEDs in a variety of patterns: binaryup.asm, binarydn.asm, binarylr.asm and flash.asm. The compiled object code is also provided: the hex files. Don't worry if it all sounds very complicated, keep reading and it will start to sink in.

You use the qel3081.exe software interface to program these hex files into the PIC Chip

How to Proceed.

1. First of all you need to install the 3081 software to your computer from the CD-ROM supplied.

This will copy the files to C:\3081. Next make an icon on the Windows desktop for **qel3081.exe**. Follow the instructions in the **drivers.txt** file. Then run the qel3081.exe software and check that the program comes up on the screen.

2. Print out the **3081Manual.pdf** manual (In C:\3081). The schematic and assembly instructions are in it as well as the Introductory Programming Tutorial.

3. Assemble the kit version. Connect it to a parallel port of your PC. Add power to the board. **Read page 3** of the 3081 Manual and run the software Test for the hardware.

4. If the Test is OK then press program and with the 16F84A in IC4 select the **binarylr.hex**. Note the programming sequence: erase, programming, fuses set. After it is completed remove the power and move the PIC to the TEST socket. Connect the power. The LED's should run left-right-left. Print out the commented source code **binarylr.asm**.

5. Now it is up to you to use the Tutorial, the examples given and any other PIC books you have to learn to program. For example, a good set of books are to be found at

<http://www.sq-1.com/>

Buy *Easy Microcontrol'n* first.

6. When you feel ready you will have to download MPLAB as outlined on page 27 of the Tutorial. Here are the current details of how to do it. Try not to let the complexity and size of the program intimidate you. The learning curve is steep but stay with the PIC16F84A only and follow the Tutorial outline.

Log onto <http://www.microchip.com/> for more resources.

On the Microchip home page, there is search box at the top. Do a search for "PIC16F84A"

Install the MPLAB v5.70 (the 13.7MB file Mp57000 full .EXE) on the 3081 software CD-ROM supplied. This is the well tested, simpler version.

DO NOT use the later version as these still have minor bugs and incompatibilities. That is the last thing you need when you are new to the subject.

After installing, we suggest you take some time to view the Readme files, Manual & Tutorial and get a feel for how the program works.

Conclusions.

1. You now have the Introduction and Tools to learn quite a bit about programming the PIC16F84A. It is now up to you to work at your own pace through the examples provided. Vary the examples to flash LED's differently. Program to flash the LEDs by different methods of code.

Then you can use the programmer to program the 16F84A independently of the Test Circuit. It is a 16F84A programmer in its own right. And combined with the free MPLAB you have a cheap and powerful entry point into microcontroller programming.

There are many schematics on the Web using the 16F84A. The magazine [Everyday Practical Electronics](#) in the UK publishes a PIC project almost every month currently.

2. When you outgrow the Kit 3081 and want to program other members of the Microchip family look at buying one of our other programmers: Order Codes 3117, 3128, 3149, 3150 and 3182). Full details can be found on our website. Join our mailing list for software updates and details of new product release at:
http://www.quasarelectronics.com/mailling_list.htm

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