

KIT 96. SERIAL PIC PROGRAMMER

This is a kit of parts and a PCB to use the P16PRO software of Bojan Dobaj to program all 8, 18, 28 & 40 pin DIP serial programmed PIC's. Parallel programmed PIC's - 16C5X - are not supported by this programmer. (See K117 to program these PICs.) The P16PRO software will work under DOS, W3.1 or W95/98.

Do not confuse these programming **methods** for PIC chips with the serial port and parallel ports of a PC. A serial programmed PIC refers to the programming algorithm by which data enters the PIC. In this method the data bits are entered serially onto 1 pin (like a shift register) and the 13V programming voltage is toggled onto a programming pin to latch and burn the word (12 or 14 bits.) In the parallel programming method the whole word (12 or 14 bits) is presented on the PICs 8-pin port B and 4-pin port A simultaneously then the programming voltage is toggled. Timing is critical. On-board firmware is usually, but not always needed to do this.

You can download the latest shareware version of the **P16PRO** software from:

picallw.com
kitsrus.com
dontronics.com

There is a free **P16PRO Lite** version which will just program the 16C84 & 16F84 PIC's. Then there is the shareware version P16PRO which will program these and other PIC's. It will last for a 21 day trial period before it needs to be registered (\$US15).

See the **picallw.com** website for a full up-to-date list of the PICs the software will currently program. New PIC's can be added as they are released by entering them in the **device.ini** file of the software. The software shows you where to place your PIC chip on the board for programming. The hardware & power need to be connected for this to happen.

Schematic. See the schematics on the next page. The power supply is shown in the top schematic.

Hardware Error. Please note **R1 on the PCB should be 1K** ohm as in this Documentation. In some previous documentation the schematic was wrong (R6 and R1 were interchanged) and R1 was given as 10K. R1 is 1K. The PCB with this kit may be incorrectly marked 10K. IC labeling has been corrected between the schematic and PCB overlay (12/2001.)

Construction. There are 4 links to add to the board. We have used zero ohm resistors for this. We have supplied 8 18 & 40 pin IC sockets. However, for maximum ease and flexibility you may wish to supply your own 40 pin **wide-slot** ZIF (3M, Aries) socket. Use the 14 pin IC socket to mount the inverter buffer IC. You will need to

connect the programmer to the parallel port of a PC using a **straight-through** male/female cable from the on-board 25 pin PCB-mounted sub-D connector.

COMPONENTS

Resistors, 5% 1/4W:			
680R blue grey brown	R11		1
1K brown black red	R1		1
4K7 yellow violet red	R2 3 4 5 9 10		6
10K brown black orange	R6 R7 R8		3
SN74LS06 inverter buffer	IC1		1
78L05	IC3		1
78L08	IC2		1
100nF 104 monoblok	C1 2		2
330pF ceramic	C4		1
470uF/35V ecap	C3		1
40 pin IC socket			1
8 pin IC socket			1
14 pin IC socket			1
18 pin IC socket			1
BC557	T1 T2 T3		3
Bridge rectifier WO2M			1
5mm red LED	L1 3 (use red LEDs)		2
5mm green LED	L2 (use the green for L2)		1
25 pin male R/A subd connector	1		
DC power jack 2.5mm			1
Kit 96 PCB			1

Hardware Description. This can be found on Bojans website given above. It is best to use a Texas Instruments SN74LS06 or SN74LS16 high current, high voltage buffer inverter. 7406 and 7416 are also OK to use. (The '05 parts may work but are operating outside specification. Note different brands of these ICs have different specifications!)

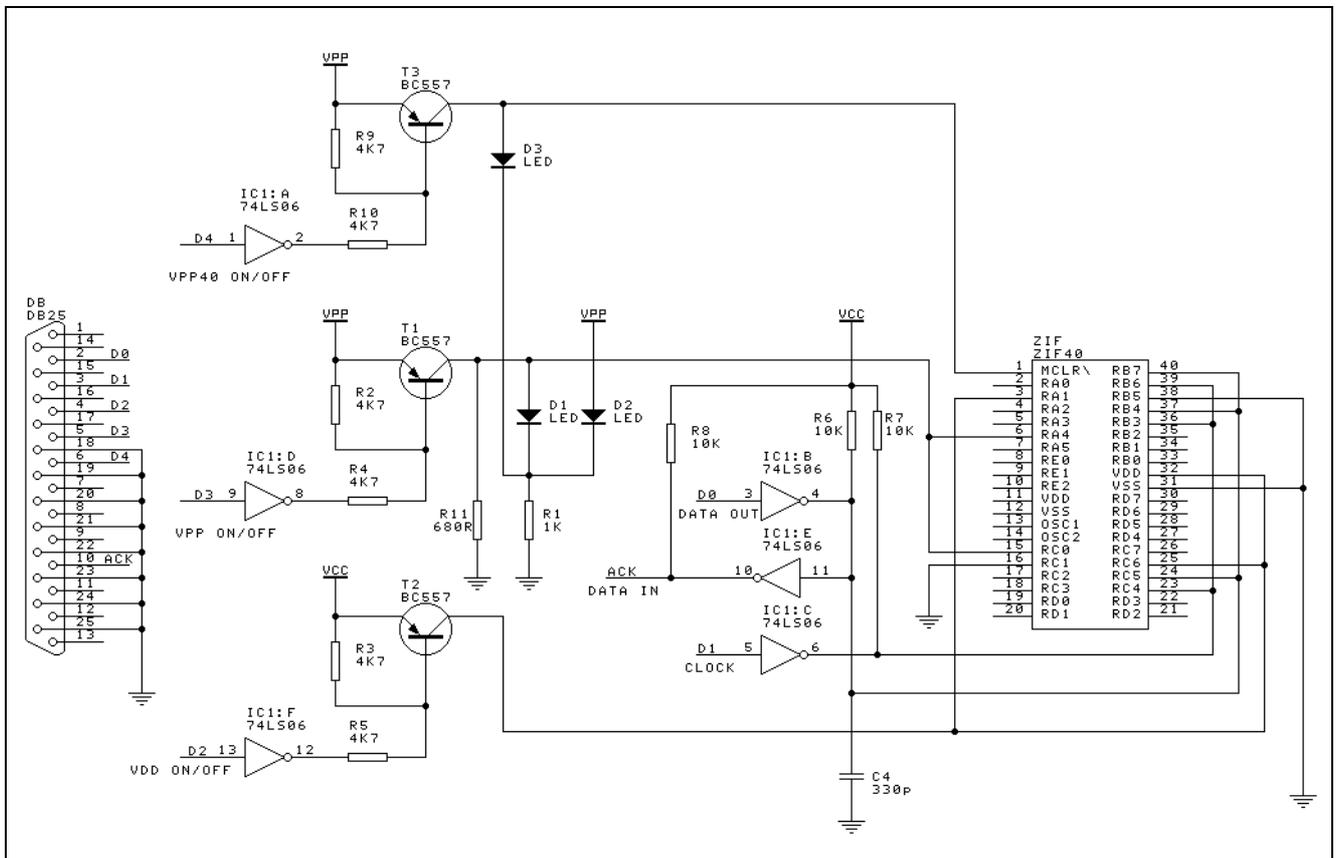
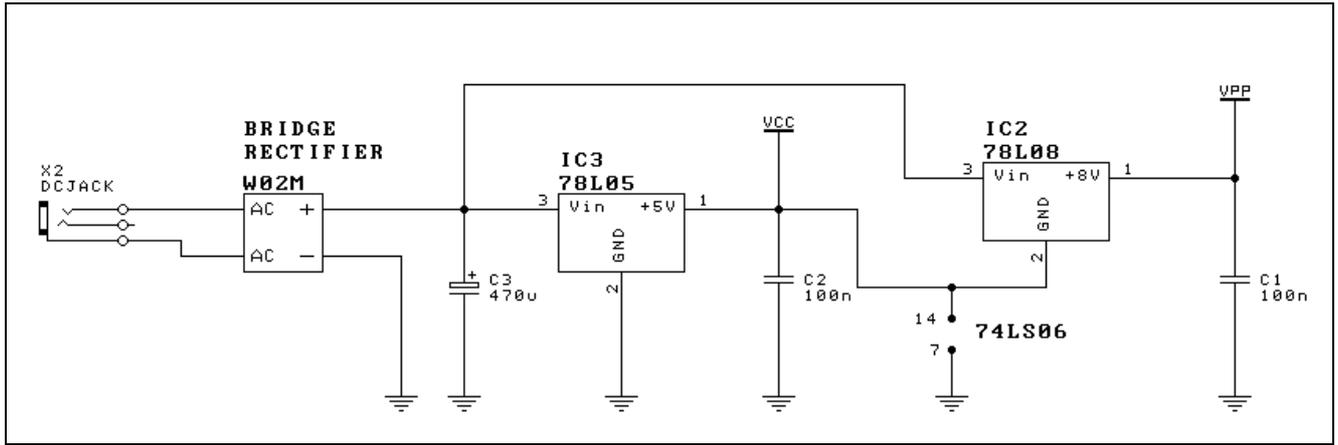
To register your software go to **electronics123.com** or **dontronics.com**. For a comprehensive list of PIC tools & websites go to

dontronics.com
kitsrus.com

PIC Newsgroup. There is an active PIC newsgroup. To subscribe email listserv@mitvma.mit.edu with the **SUB PICLIST** in the body of the message. You will receive an email back within minutes. I suggest you then send another message **SET PICLIST DIGEST** to the same address. Then you will start to receive a single message each day containing all the messages sent to the list for the previous day. Note that the List is rather Conservative so stick to PIC topics. There is a mine of PIC information at the piclist website. Personally, I find it a confusing site to navigate. There seem to be two entry points:

<http://www.piclist.com>
<http://www.piclist.com/techref/index.htm>

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Using PICALLW.EXE to test Kit 96

In 2002, the Windows version of PICALL is the programming program to use with Kits 117, 96 81 and 119. This program **picallw.exe** is where the developer Bojan Dobaj is putting all his effort.

Forget P16Pro, pf84 and 'picall for dos'. Use the latest version of Picall for programming all the above programmers.

Instead of changing the documentation for all these kits I have initially done this general information sheet. Download version 0.10c, 11/2001 of picallw.exe from

kitsrus.com
dontronics.com

and install it.

picallw.exe will work **free** for PIC16F84 programming in all programmers. No registration is required. If you have a paid registration for P16PRO then move the p16pro.reg file to the same folder as picallw.exe.

For Kit 96.

Connect power to the K96. If there is a problem connecting from the PC to K96 an error message may come up. Click P16PRO in the drop down box in the center of the startup screen. Go to Settings/LPT Port and set 'Auto' if it is not already set by default.

Go to Settings/Hardware Setup-Test. If the message 'Can't find the P16PRO or compatible hardware' comes up then check the cable, power supply to the board, component placement and soldering. Is the cable a **straight-through** cable?

If you get the Test box then the PC is able to communicate with the target board. The first thing to do is click on the programmer type you are using in the lower left box: kit 96.

Now look at the 'Set/Clear' boxes in the third column on the right hand side. This is the only place where you will click things on this test screen. Each 'Set/Clear' box relates to the hardware connection written in the center column: Data Out, Clock ... Reset.

In kit 96 looking at the schematic:

- pin 3 is Clock
- pin 4 is VDD,
- pins 2 and 10 are Data Out and Dataln,
- pins 5 and 6 are the VPP and VPP40 resp. which turn on each of the two LEDs.

First click Set/Clear on VPP and on VPP1. Click on VPP will turn the PROGRAM LED on/off. Click on VPP1 box should turn the Vpp40 LED on/off. Vpp LED will be on all the time.

Now use a multimeter set to 20V. Connect to ground lead somewhere on the board. Connect the red lead to pin 3 of the DB25 connector. Clicking on the Set/Clear will turn on 5V to pin 3 then turn it off. Similarly with pins 4 and 2 & 10. These tests can be used to trace the 0V/5V at other places on the target board. They show that the cable connection is working to the target board.

When just the power is connected to Kit 96 without the cable being connected all LED's will be on. When the cable is connected the LEDs should go off except the Vpp LED. You should get the hang of it by now.
