

QUASAR PROJECT KIT # 3096KT – P16PRO40 SERIAL PIC PROGRAMMER

This kit is designed for use with the P16PRO or PICALLW software to program the DIP *serial** programmed PIC's listed below. The P16PRO DOS software works under DOS, W3.1x, 9x & ME. **Although the PICALLW Windows software works under all versions of Windows some users have reported problems running the P16PRO40 hardware under NT and XP.** We therefore recommend you use either the PICALL hardware (3144) or one of our USB programmers (3128, 3149 or 3150) if you run these later versions of Windows and not 3096.

Parallel (see note below) programmed PIC's (16C5X family) are not supported by this programmer. Our kit 3144 can be used to program these devices.

NOTE: Do not confuse the different PIC programming methods with the serial and parallel ports of your PC. A serial programmed PIC refers to the programming algorithm by which data enters the PIC. The data bits are entered serially via 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.) With 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 and then the programming voltage is toggled. Timing is critical so PICALL hardware kit 3144 has a crystal controlled timing circuit for parallel PIC programming.

These are some of the PIC's that this kit currently supports:

PIC12C5xx	PIC14000	PIC16C554	PIC16C556
PIC16C558	PIC16C61	PIC16C62	PIC16C62A
PIC16CR62	PIC16C63	PIC16C64	PIC16C64A
PIC16CR64	PIC16C65	PIC16C65A	PIC16C66
PIC16C67	PIC16C620	PIC16C621	PIC16C622
PIC16C710	PIC16C71	PIC16C711	PIC16C72
PIC16C73	PIC16C73A	PIC16C74	PIC16C74A
PIC16C76	PIC16C77	PIC16F83	PIC16CR83
PIC16C84	PIC16F84	PIC16CR84	PIC16F87x
PIC16C923	PIC16C924	PIC16C642	PIC16C662
PIC16C715		

For the full list of supported devices please refer to the drop down menu (having first select P16PRO not PICALL) in the latest version of the software. As new PIC's appear on the market, they can be added by entering them in the *Device.ini* file of the software (or download the latest software version from our website).

HARDWARE A full description can be found in the PICALLW Help section (or P16PRO DOS **manual.txt** file) see SOFTWARE section below.

Schematic The schematic diagram is also provided (see **P16pro.pdf** file or Help Section). We have made a few minor improvements to the original circuit.

Construction There are 4 links to add to the board. Use zero Ohm resistors. We have supplied 8, 18 and 40 pin IC sockets for programming (cut the 40 pin socket in half to fit it over the two narrower sockets). However, for maximum programming flexibility, you will need to use a 40 pin **wide-slot** ZIF Socket (our Order Code SCS-AZIF40). The 28 pin PICs programmed by this kit are all narrow 0.3" DIPs so the ZIF socket is needed to do these. The 14-pin socket is for IC3. Carefully check position and orientation of components C3, BR1, IC1 and IC2.

Component C5 (330pF) from pin 6 of the 7406 to ground is not supplied because there has only been one report that it may be required. If you receive Programming Failure messages and you have a new 486 or Pentium computer with LTP port on motherboard then you can try adding it.

NOTE: To program 64 pin PIC's (16C92x & 17Cxxx) you can buy an adaptor from Microchip or make your own. Only 5 lines

need to be taken from the 40 pin socket to the adaptor card (MCLR/Vpp, Vdd, Vss, RB7 and RB6).

COMPONENTS

	PART No.	QTY
Resistors, ¼W, 5% (gold):		
1K (brown black red)	R1 (not 10K on PCB)	1
4K7 (yellow violet red)	R2, 3, 4, 5, 9, 10	6
10K (brown black orange)	R6, 7, 8	3
680R (blue grey brown)	R11	1
Zero Ohm resistors for links		4
100nF (104) monoblock	C1, 2	2
470uF, 35V ecap	C3	1
330pF ceramic (331)	C4	1
BC557	Q1, 2, 3	3
78L05	IC1	1
78L08	IC2	1
SN7406 inverter buffer	IC3	1
5mm red LED	L1, 3	2
5mm green LED	L2	1
8 pin IC socket		1
14 pin IC socket (for IC3)		1
18 pin IC socket		1
40 pin IC socket		1
Bridge rectifier WO2	BR1	1
Male R/A DB25 connector		1
DC power jack 2.5mm	X1	1
3096 PCB		1

SOFTWARE Download the latest version of the PICALLW Windows or P16PRO DOS software (these contain the other information mentioned in this document) from our website at:

<http://www.quasarelectronics.com/software.htm>

These shareware evaluation versions will program 16X8xx and 16F62x PICs for free but are limited to programming the first 256 bytes of a hex files for other devices. Registering the software is necessary if you want to write hex files larger than this. Once registered you will receive lifetime support and free software updates via our website.

Registration is £14.95 for the P16PRO version, £20.95 for the PICALLW version or £24.95 for both. See the **register.txt** file supplied with the software for full details. Or you can register online at our web site:

http://www.quasarelectronics.com/software_registration.htm

SETTING-UP Connect the programmer to the parallel port of a PC using a straight-through 25 pin M/F cable. A **17-30VDC or 13-20VAC** plug-in power supply is required. Either will work. You **MUST** set the drop down menu in the main window of the software to '**P16PRO**' option (NOT PICALL). Then under Settings>Hardware select 'P16PRO 74LS05,6 KIT96'

Please refer to Help Section of PICALLW software (or **manual.txt** file if using P16PRO DOS version) for full setting-up details.

If the programmer fails to work try removing **any parallel port printer or scanner drivers** from your computer and retry.

SOFTWARE UPDATES To receive information on software updates please join our e-mail newsletter at:

http://www.quasarelectronics.com/mailling_list.htm

You will find a comprehensive list of PIC-related websites on our LINKS pages. Another good website is the official PICList at:

<http://www.piclist.com>

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If you have any questions regarding this kit, please contact our Tech Support staff at support@quasarelectronics.com

USING PICALL.EXE TO TEST KITS 3096 and 3144

From 2002 the Windows version of PICALL is the best version to use with kits 3096 and 3144. This program **picallw.exe** is where the developer 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 we have initially done this general information sheet. Download the latest version of the PICALL AVR Windows Software (filed under kit 3117) from

<http://www.quasarelectronics.com/software.htm>

and install it.

Kits 3117 and 3144

This is the easy one since picallw.exe is targeted at Kits 3117 and 3144. Connect a **straight-through** Male/Female cable from the PC parallel port to kit 3117/3144. (**Not** a modem cable; **not** a lap link cable – a straight-through cable.) Connect power. The green LED should go on. Neither of the red LEDs should turn on. If they do then check component placement and soldering before going on. Make sure PICALL is the programmer selected in the center drop down menu.

- Settings/LPT Port. Set to 'auto' is what we use
- Settings/Hardware Setup-Test. Click on the first 3 tests will show little dots appearing after the test box. If everything is OK the word 'passed' will appear.
- clicking on Set/Clear VPP and Set/Clear VPP1 will turn the two red LEDs labeled VPP and VPP1 on Kit 3117/3144 on/off

That is it. Click OK and do your programming. If you get any Error Messages you can find the details at:

Help/Contents/Hardware/PICALL Hardware/PICALL Error Codes

Kit 3117/3144 is the hardware version 3.1 mentioned in the software documentation. Unfortunately we can find no discussion in the Help about Prog Delay Auto Adjust setting. Just leave it where it is seems to work well.

ALL OTHER KITS

For all the other programmers click P16PRO in the drop down box in the center of the startup screen.

Picallw.exe will work **free** for PIC16F84 programming in all these other 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.

First go to Settings/LPT Port and set 'Auto'. Go to Settings/Hardware Setup-Test. If the message 'Can't find the P16PRO or compatible hardware' comes up then check component placement and soldering. The test box is different from that for 3117/3144.

The first thing to do, obviously, is click on the programmer you are using in the lower left box: kit 96, kit 119, kit 81 or the DT-001. (If you made your own Tait-stype programmer you can set the settings yourself for it.)

Do not play with any settings in the first two columns which were set automatically when you pressed kit 96 button. Now look at the 'Set/Clear' boxes in the third column on the right hand side. This is the only place where we will click things. Each 'Set/Clear' box relates to the hardware connection written in the center column: Data Out, Clock ... Reset.

In kit 3096 looking at the schematic:

- pin 3 is Clock
- pin 4 is VDD,
- pins 2 and 10 are Data Out and Data In,
- 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. The red programming voltage LEDs should turn on/off.

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.

CONTACT US

For details of our complete kit range please visit our website at:

<http://www.QuasarElectronics.com/3096.htm>

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