

KIT 144. PICALL V3.43 PIC PROGRAMMER

The PICALL hardware and software has been under continual development by Bojan Dobaj for over 3 years. Kit 117 has been a big success. Bojan has now added hardware to Kit 117 to also allow programming of some Atmel AVR and Scenix microcontrollers, serial EEPROM's in addition to In System programming (ISP) for PIC and Atmels. ISP is also called ICSP (In Circuit Serial Programming.)

See Bojans website at <http://www.picallw.exe> to see the list of chips which Kits 117 and 144 can program.

Kit 117: will program the PICs listed.

Kit 144: will program the PIC, Atmel, Scenix and EEPROM chips listed as well as do ISP programming as discussed in the [picallw.exe](http://www.picallw.exe) Help files/Contents/ Technical Information/ICSP. Six pin are required for AVR ISP programming. Five are required for PIC ISP programming. The sixth pin is for PIC16F87x ISP programming.

This documentation assumes you are already familiar with microcontroller programming and programmers.

Make sure you download and use the latest picallw.exe (currently version 0.10c, november 2001) of the PICALL software from one of the following websites:

[picallw.com](http://www.picallw.com) (software writers website)
[kitsrus.com](http://www.kitsrus.com) (hardware supplier)
[dontronics.com](http://www.dontronics.com)

The PICALL software as downloaded is **fully functional**. There is no additional registration fee to pay.

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.

Do not confuse these programming methods 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.

Schematic. See the two schematics below. The power supply gives the 5V and 13VDC levels required for the programmer.

We have supplied a 40 pin IC socket for programming. However, for maximum flexibility in programming you will need to buy your own 40 pin **wide-slot** ZIF (zero

insertion force) (3M, Aries) socket. You must connect the programmer to the PC parallel port using a **straight-through** (male/female) cable from the on-board 25 pin PCB-mounted subd connector.

NOTE: the **Aries brand** ZIF socket has small pins while the **3M brand** socket has wide, flat spade/shovel-type pins. The PCB supplied is made to take both sockets. So in the **UK** and in **Australia** where Aries ZIF sockets are more common make sure you do not over-solder the ZIF socket by continuing to feed in solder wire into the hole. The solder will just flow through onto the top/overlay side of the board and possibly short out the pin(s) next to it. (People have done this then abused me for making the holes to large. Hence this explanation and warning.)

COMPONENTS

Resistors 5%, 1/4W:			
150R brown green brown	R12 13 14 15 16		5
680R blue grey brown	R17		1
820R grey red brown	R7		1
1K2 brown red red	R9		1
2K2 red red red	R3		1
4K7 yellow violet red	R1 R2 R4 R5 R6		5
10K brown black orange	R8 R11		2
Metal Film 1%:			
47R yellow violet black gold	R18		1
1K2 brown red black brown	R19		1
78L05	IC1		1
78L08	IC2		1
PIC16C62-04/SP firmware	IC3		1
1N4148	D1 D2 D3 D7		4
4.00mhz crystal 49/US	X1		1
10n mylar capacitor	C3		1
22pF ceramic	C5 C6		2
100nF 104 monoblok	C1 2		2
470uF/35V ecap	C4		1
28 pin 0.3" skinny, IC socket			1
40 pin IC socket			1
6 pin header and harness			1 set
BC557	T1 T2		2
BC547	T3 T4		2
Bridge rectifier WO2M	BRECT		1
5mm red LED	D4 D5		2
5mm green LED	D6		1
25 pin male R subd connector	X3		1
DC power jack 2.5mm	X2		1
Kit 144 PCB V3.42/V3.43			1

R10 and D8 not to be installed in this version.

Assembly. We have supplied a DS PTH (double sided, plated through hole) PCB so no links are required. Check the components against the Components Listing above. Follow the overlay in placing the components. Because

KIT 144. PICALL V3.43 PIC PROGRAMMER

you are building this advanced programmer we have assumed you have previous experience in kit building.

Note: D8 and R10 are **not** supplied. Just before release of this kit Bojan found that these components affected 24C256 EEPROM programming so they are not to be connected at this time. Not having them does not affect any other programming mode.

Testing K144 with picallw.exe. 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'.
- 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 labelled VPP and VPP1 on Kit 144 on/off.

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

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

Kit 144 is the hardware version 3.3 mentioned in Bojans documentation.

Prog Delay Auto Adjust setting: just leave it where it is seems to work well.

To program the 64 pin PIC's - 16C92x & 17Cxxx - you will need to buy an adaptor from Microchip or make your own. Or use the 5 lines from the ISP socket - Vpp/MCLR, Vdd, Vss, RB7 & RB6. (Pin 2 LVP is not connected.)

For a comprehensive list of PIC tools & websites go to **dontronics.com**

If you have questions or error reports about the software please email Bojan Dobaj at **support@picallw.com**

Version History: V3.43. Anode of D8 (not used yet) moved from RB5 to RB3. This is for future use. R10 and D8 not used yet.

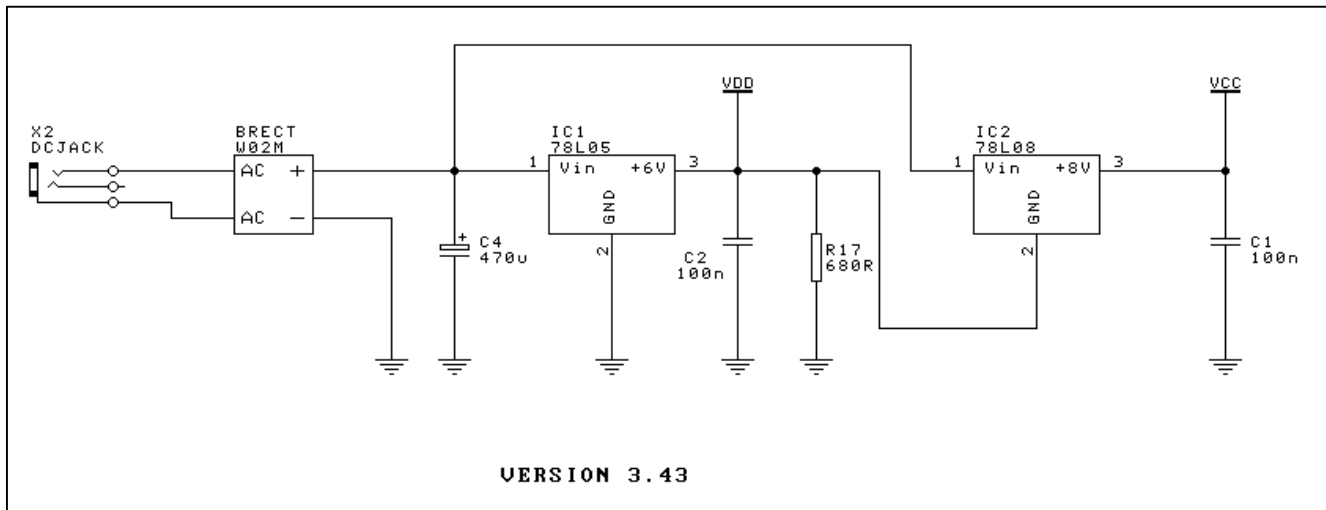
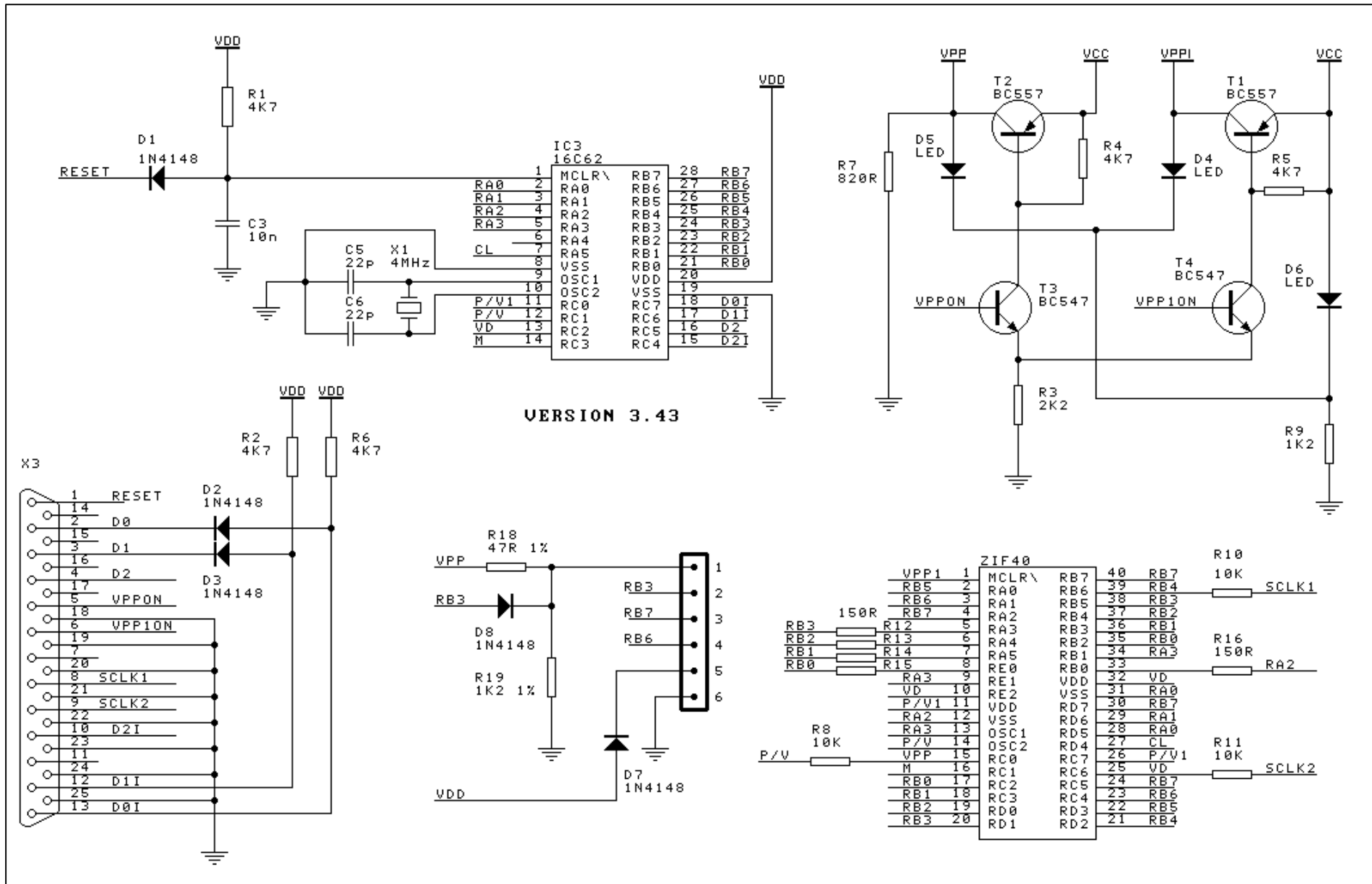


Figure1. Power Supply

KIT 144. PICALL V3.43 PIC PROGRAMMER



KIT 144. PICALL V3.43 PIC PROGRAMMER

May 2002. MODIFICATIONS to adapt V3.4x Kit 144 to program 28 and 40 pin 18Fxxx.

Now you can use the new version 0.12beta to program 118Fxxx and 18Cxxx 28 and 40 pin PICs with K144.

At the end of May, 2002 Bojan Dobaj, the software writer, released a version of his picallw.exe software which will allow programming these new chips. A couple of hardware modifications to K144 are required. See the schematic below:

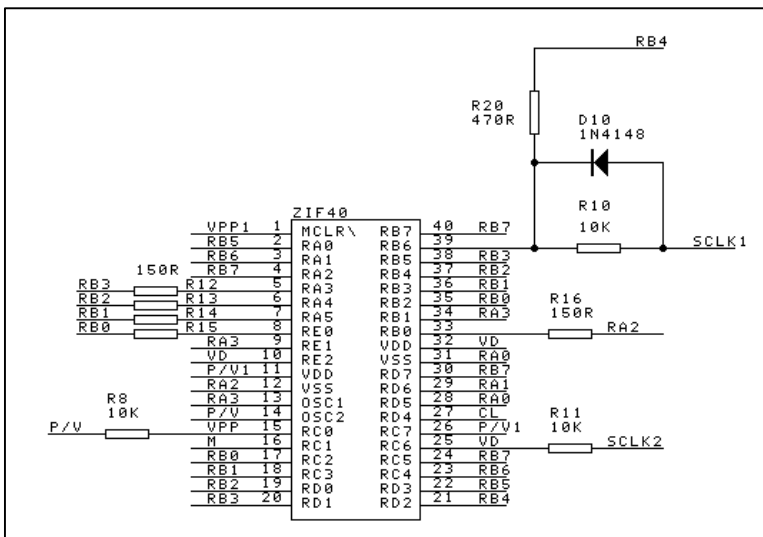
Download **paw012c.zip** from **picallw.com** or from

<http://www.kitsrus.com/zip/paw012c.zip>

- add the R10 resistor 10K ohm in the position already made for it on the PCB V3.4x
- add D10, 1N4148, across R10 in parallel
- cut the track from pin 39 of the ZIF socket and R10 going to pin 21 of the ZIF socket and pin 25 of IC3 and add R20, 470R

PIC18Cxxx. The above hardware modifications will also allow programming PIV18Cxxx when available. The firmware will not change but new software will have to be downloaded.

All the changes relate to the connections on pin 39 of the ZIF socket.



Programming Voltage for K144. Some people have complained that finding power supplies to provide 17VDC is difficult. Note we make Kit 135 which will convert a DC input voltage of 6V – 12V up to the 17VDC needed by K144 and K117.