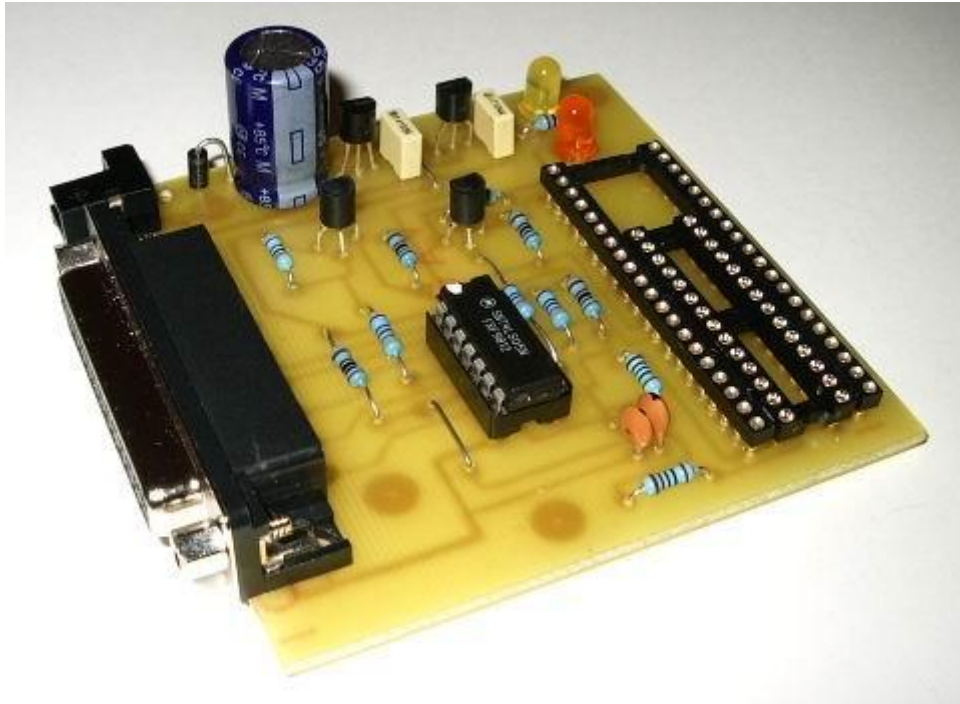


The DIY Pic Programmer

Jan 2007



The 28pin/40 pin Parallel Port Programmer

It will enable you to produce a simple, cheap programmer for the projects chips.

Construction should be easy, but please read all the notes before ordering the parts.

The board been tested with the following chips, but there is no reason why it should not program all the chips specified in the WinPics program library.

Pic 16F873 16F873A 16F876 16F876A 18F2520 18F4520 18F2550 18F4550

If you only have a USB port or want to program a wider range of Pic chips then the best option is to purchase a genuine Microchip Pickit2 Programmer at around \$35 plus taxes and shipping or build a Pickit2 Lite, which does need a pre-programmed chip to work.

2

The Hardware.

A pcb layout is provided and all parts are standard.

Hand wiring on a piece of vero / strip board is equally easy, but using a breadboard is likely to give plenty of errors, unless every connection is perfect

Construction should pose no problems, but please check with your supplier the correct pin out for their transistors and regulators in case they differ.

Provision is made on the pcb for a ZIF socket, if you are considering it for regular use.

Note that ic1 and ic2 are mounted in opposite ways.

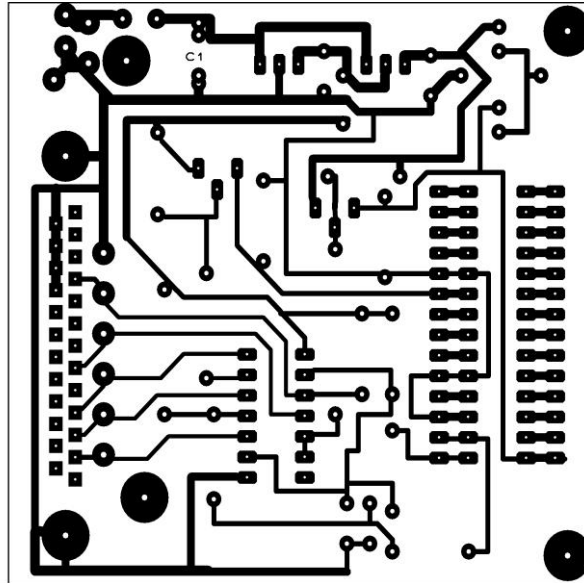
Please see the hardware notes in the rest of this document before ordering your parts.

Parts List.

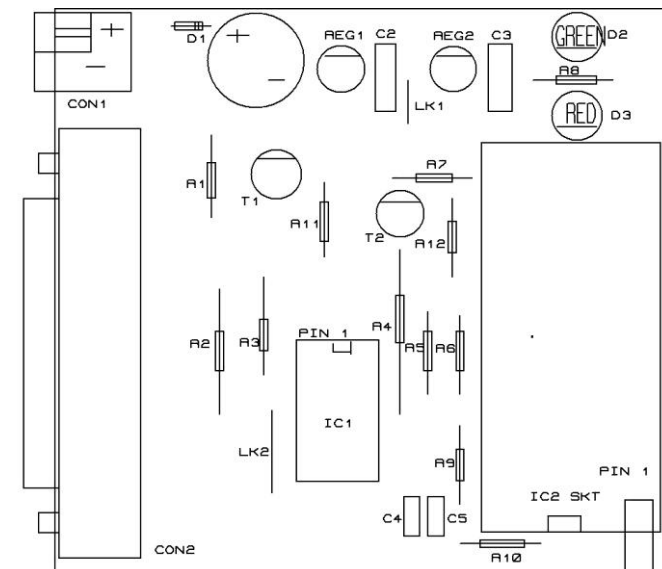
IC1	74LS05	1	
D1	1N4004/5/6	1	
C1	1000 or 2200uf 63v	1	radial
C2/3	100nf	2	5mm lead spacing
C4/5	33pf	2	ceramic
REG1	+5v 100ma	1	
REG2	+8v 100ma	1	
T1/2	BC557	2	
LED1	RED	1	3 or 5 mm
LED2	GREEN	1	3 or 5 mm
R1,3,4,5,7	4K7	5	.6w
R2,6,11,12	10K	4	.6w
R8	1K	1	.6w
R9,10	100 OHM	2	.6w
ICSKT1	14PIN DIL .3"	1	NEW
ICSKT2	28PIN DIL .3"	1	NEW or 28p ZIF socket
SK3 *	2.5mm power skt	1	+ to inner or 2x5mm connector block
SK4 *	d25 pcb connector	1	male or female to suit your cable
CAB	d25 cable	1	parallel port to pcb cable – see text
PSU	as spec	1	mains plugin type psu 16-25v DC min 300ma

* extra, larger pcb pads provided to allow cables to be hardwired, instead of sockets

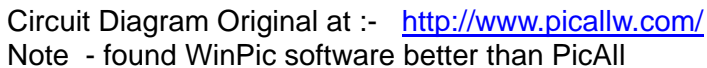
The PCB Layout - Please check the board printed size is 77mm x 77mm



Pcb view – looking down from topside through board



Component silk



Hardware Information.

Please observe the following if you wish to avoid all sorts of weird problems when trying to burn.

Use only brand new ic sockets, preferably with a new pic ic. (contact resistance)

If hard wiring, keep the wires short and the whole circuit layout compact.

The D25 cable should be a good quality round screened type, and no more than 2m long. It will perform more reliably if you can shorten this length - but make sure you maintain the integrity of the cable screen. Use the Straight type of cable not a Crossover

Connect directly into the PCs parallel port, do not go via a switch box.

Do not add any extra capacitors to the circuit. These can affect the circuit timings.

Testing - check +5v and +13v are nominal.

Current measured at power socket-

no chips in	9ma	1 led may be lit
with 74ls05 in	13ma	1 led may be lit
actually programming	28ma	2 leds lit

Note that until connected to the parallel port / WinPic the leds may assume any condition.

Individual lines can be tested by the software; see software section.

Software

There are several program to choose from - but I found WinPic worked fine.

WinPic

Download the software directly from www.gsl.net/dl4yhf/winpic/winpicpr.zip or www.gsl.net/dl4yhf/winpic if you want to look at their site more.
(it looks rather complicated if you are not into micros, but it is good information should you have more interest in them)

Just let it self unzip, then install and startup.
To run, you need to first configure the program.
First goto 'tools' and ensure the 'show toolbar' is checked on.

From the interface folder , interface type; select 'custom on LTP1 from file'
Then port LPT1 address 378 – assuming you are using a standard port pc.
From the Custom Interfaces select 'Bojan Dobaj PR16PRO40'
Notice that this folder also allows you to test the lines out to the programmer board.

In the options folder; select your language, and select the I/O DRIVER; SMPORT driver.
Two small files should also downloaded with this document in the section PROGDEV.
Put this folder on say c:/ These files tell the programmer about the types of chips used. In the 'MPLAB DEV file dir ' box, browse and select this folder.
(or point the program to the respective mplab ide folder if your have mplab on your pc)

From the 'device,config' folder select the required chip, this may bring up a mismatch message, from the option folder, reply yes, to correct.

Now from the File, Load or Open folder, load in the latest.HEX file.
You are ready to program, but if you select the messages folder you can watch the messages as it programs. Press the Program Icon to run.
Once it says done Ok then try it in the working circuit – should be fine.

If it does not program successfully then :-

Check your hardware, and run the line tests from the program and check with a voltmeter.

If things work, but on a random basis, then try a totally different PC.

My original PC always gave problems when programming large files, yet on the new PC it is fine.

If all else fails then try a totally different Program like PicAll to see if it runs ok with that.