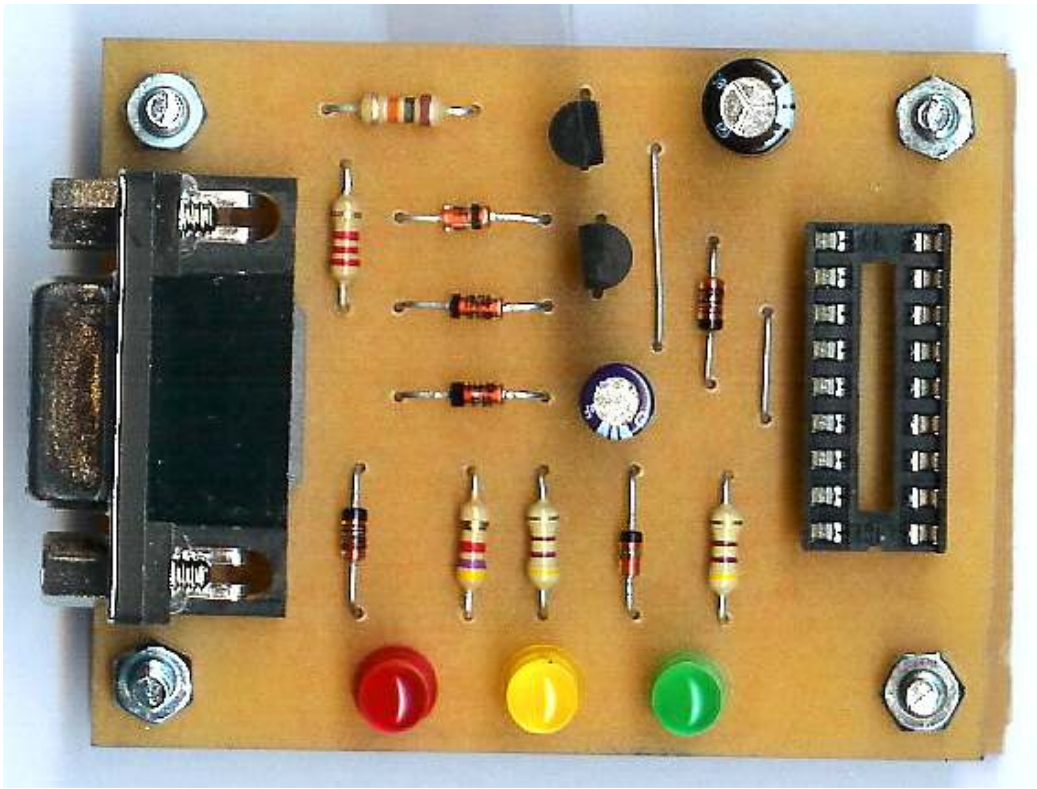
How to build your own PIC-Programmer

You can find on DB5AG´s Homepage the german description of this homebrewed PIC-progammer (PIC-Burner). The original schematic was developed by Radu Igret. It is a modification of a JDM-Programmer. This PIC-programmer has to be connected with the serial com port of your computer. This device don´t need any external power supply. The print layout was made with Eagle by CadSoft.

Which types of PIC microcontrollers and EEPROMs are supported?

You can use this PIC-Burner for PIC12C50x, PIC12F62x, PIC16FFxx, PIC16F62x and EEPROM 24Cxx. This PIC-Programmer was tested with PIC12C508 (A), PIC12C509 (A), PIC12F629, PIC12F675, PIC16F84A, PIC16F627, PIC16F628.



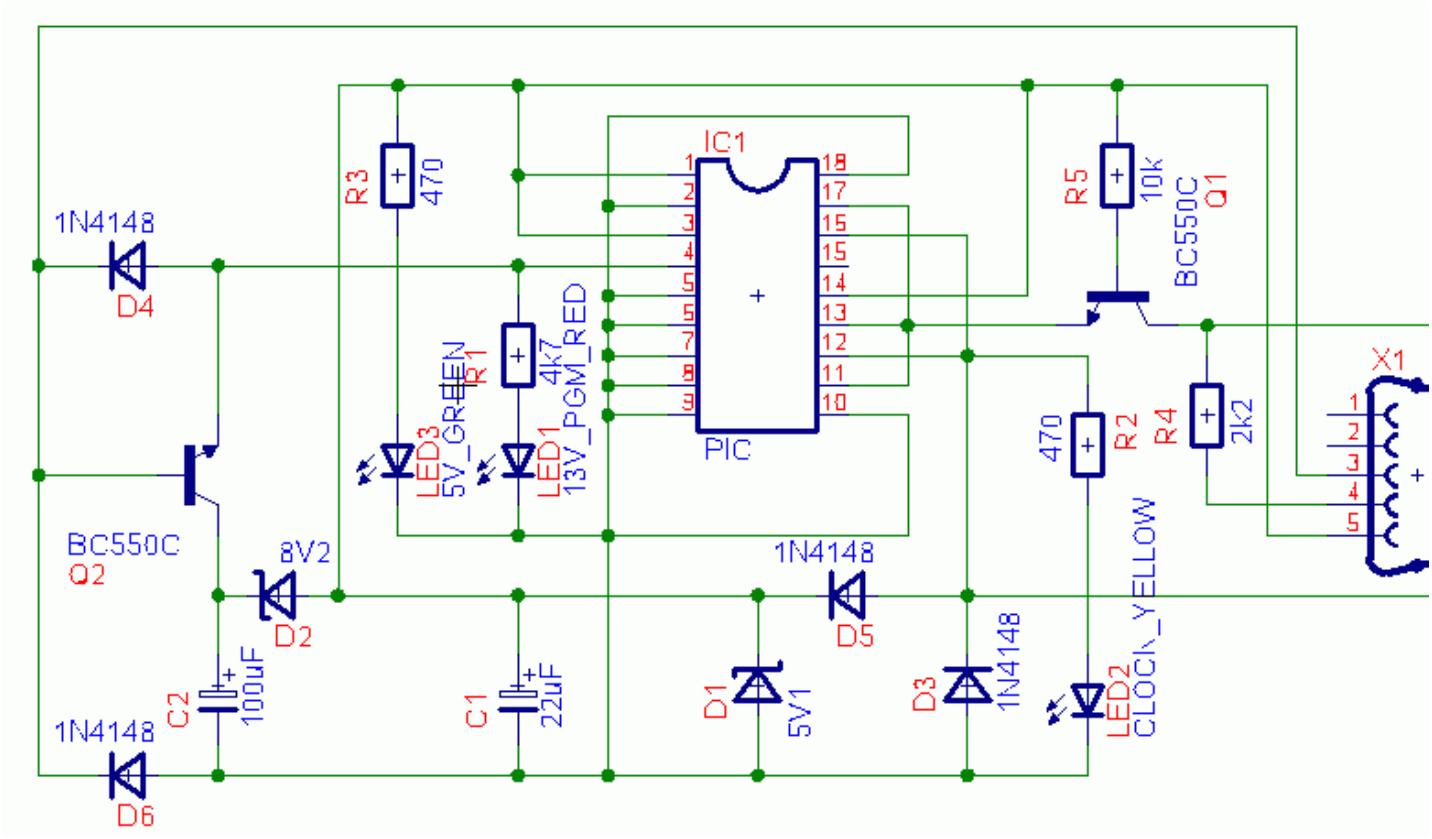
The PIC-programmer is easy to build and compact. 3 LEDs indicates the state of the burning-process. Red: burning, yellow: clock-signal, green: power supply. The dimensions are about 50 mm x 62 mm.

The Modification of this JDM-Programmer:

In comparison to the original JDM-Programmer exists a connection between pin 10 (JDM) and Vss instead of VDD. This modification makes it possible to program PIC microcontrollers with LVP-function (for exampel PIC16F627 or PIC16F628).

The Schematic of the PIC-Programmer:

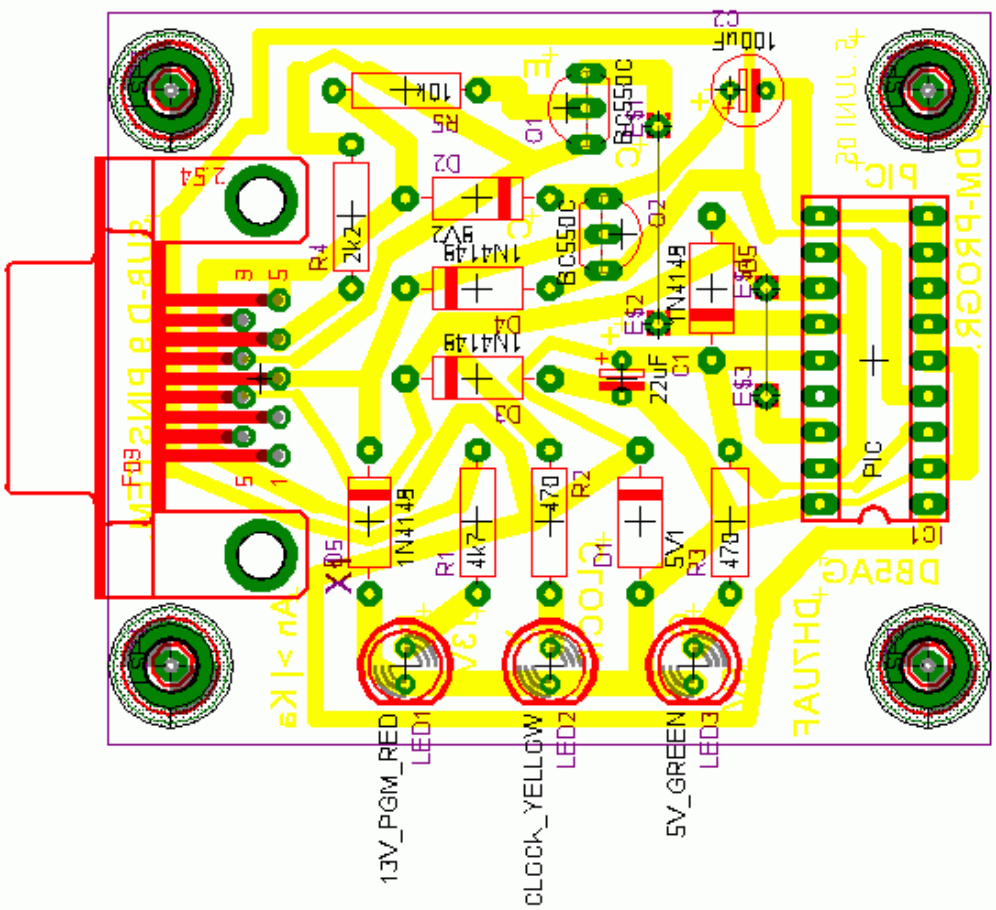
The wiring diagram was drawn with Eagle-Lite by CadSoft in order to create a print layout by my self. Eagle is a very popular print layout software in Germany and for non-commercial use free.



The schematic view of the PIC-Programmer (Download the part list here). The bipolar npn-transistors are not very critical. Probably you can choose almost any small signal types. The capacitors are 16 Volts types. The SUB-D-connector is female and has 9 Pins (Reichelt-Best.-Nr.: EMV-BUCHSE 09W). All resistors are common and have 1/4 Watts, 5% tolerance (Download of the Eagle-SCH-file for the schematic here).

The Print Layout:

I developed the print layout with the help of Eagle. Because I am not a professional layouter i used the autorouter. After some tries and errors I came to a practical solution for homebrewed stuff. My intention was not to build something for the industrial massproduction.



The component side of the pic-programmer. The small holes have a diameter of 0,8 mm, the 6 big ones 3,5 mm. It is recommended to make the print of the layout with Eagle and the Eagle-BRD-file (Download here the jdm-layout.brd and the folienausdruck.brd, which is prepared for the print).

Feel free to modify and improve my Eagle files provided you don´t use them for commercial purposes. By the way here is the print-layout as a picture (layout-as-picture.gif). The quality is not as good as a print with the Eagle-file. Don´t forget to resize the dimensions of this picture.Otherwise the components will not fit. I recommend the picture-viewer-software IrfanView.

How to insert the PICs and EEPROMs:

PIC16Fxx, PIC16F62xx

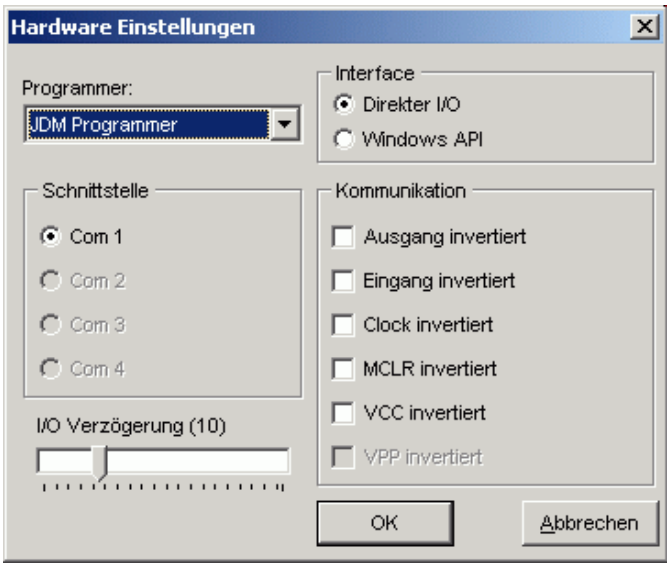
PIC12C50x, PIC12F62x

EEPROM *24Cxx*

The Software IC-Prog:

At least you need a software on your PC in order to copy the hex-codes on your harddisk into the PIC. By the way there are hundreds of hex-codes for PICs in the Internet. You don´t need to be a PIC-programmer. Just download and burn.

I use this pic-programmer in combination with the free windows-software IC-Prog. This software supports also this modified JDM-Programmer.



IC-Prog: Choose this configuration for the JDM-Programmer.

My personal Experience:
The burning, flashing, erasing and testing of used and new PICs takes 20 to 50 seconds. However I did not succed in flashing a used PIC, which was programmed by an other PIC-Programmer. I don´t know the reason.

Comments and questions to the author are welcome (in German, Swedish, Norwegian and English):
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Links of the Author:
Seminare zur Schaltungssimulation und Elektronikentwicklung
Lern-Software zur Elektronik
Amateurfunk-Linkliste

Download:
pic-programmer.zip: This zip-file contains the entire web-page (www.janson-soft.de/pic/pic.htm) including all files and Eagle-files.

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