CK1707 PROGRAMMER FOR SERIAL EEPROMs

Serial eeproms are finding more and more use in electronic devices these days. These small 8 pin devices offer non-volatile data storage and require minimal I/O lines to connect to them. This makes them ideal in many microcontroller based applications.

The programmer connects to the PC parallel port and is controlled by driver software running on the PC. The software is DOS based but will run under Windows 3.1, Windows 9x and Windows NT4 (service pack 5).

The programmer requires a 9-to-12V DC supply at 50mA. A 12VDC/150mA plug pack will be fine.

The PCB is dimensions are a small 6 x 5.5 cm (2.4" x 2.2"). Provision is made on the PCB to use a 16 pin ZIF programming socket (but not supplied with the kit). **The 24xxx series eeproms use the top half of the programming socket while the 93xxx series use the bottom half.**

EEPROMS SUPPORTED
(generic part numbers are used):

- 2401, 2402, 2404, 2408, 2416
- 2432, 2464, 24128, 24256
- 9346, 9356, 9366, 9376, 9386

Only 8 bit eeproms are supported.

ASSEMBLY INSTRUCTIONS
Use the component overlay on the PCB to place the components, in the following order:

- Resistors and diode
- Wire link (use resistor offcut)
- Ceramic capacitor and IC socket
- Transistor, voltage regulator and LEDs
- Electrolytic capacitors
- DC jack and D25 connector
- Programming IC socket

Make sure that the diode, electrolytic capacitors and LEDs are inserted the right way around. Insert the 74LS05 IC into its socket and the programmer is ready for use.

CIRCUIT DESCRIPTION
The circuit is very simple. All signal levels to the eeprom are generated by the PC driver software via the parallel port and IC1 (74LS05). Transistor Q1 switches power to the eeprom and is controlled by the D3 output from the parallel port. LED L1 indicates when power is applied to the eeprom.

We have supplied a 16 pin IC socket for the programming socket, SKT. If you do mass production then we have made space for a 16 pin ZIF socket.

LED L2 indicates when power is connected to the programmer.

SOFTWARE DRIVER AND HOW TO USE IT
The programmer is controlled by driver software running on the PC. The program is called "EEPROG.EXE". Download this from
http://www.electronickits.com/kit/complete/prog/ck1707.htm

To see how to install the program see page 3 below.

The software 'auto detects' the programmer. It exits if the programmer is not found.

The first screen presented allows you to choose the eeprom type. Only generic part numbers are used ie. 2416 instead of 24C16, 9346 instead of 93C46, etc.

The program's command prompt changes to indicate the current eeprom type selected.

The next screen lists all the programming commands available. Most of the commands are straightforward and do not really need explanation.

A 32K byte buffer is used to hold data. The buffer can be loaded from an eeprom or disk file. The contents of the buffer can be programmed into an eeprom or saved to a disk file.

When programming an eeprom the driver software uses a 'start' and 'end' address within the buffer. The start address is always 0000 (first location in the buffer). The end address is normally set to the size of the eeprom -1 (the end address of a 2K eeprom is 07FFh).

If a file is loaded into the buffer the end address is the highest address used in the file. Using the highest file address speeds up programming if the file size is less than the eeprom size.

For example: A 2416 eeprom (2K bytes) is to be programmed with the contents of a file. The file only contains 256 bytes of data from 00 to FFh. The file is loaded into the buffer. The last address used when programming the eeprom is FFh instead of the maximum buffer address (7FFh).

The entire HEX file is loaded into the buffer (if not more than 32K bytes). If the file size is greater than the eeprom size the end address is set to eeprom size – 1.

Reading the contents of an eeprom into the buffer or filling the buffer with 1's or 0's sets the end address to the eeprom size.

The Intel HEX format is used to load and save files.
The file extension defaults to HEX if none is specified. The software remembers the last file used.

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IF IT DOES NOT WORK

Poor soldering ("dry joints") is the most common reason for the circuit not working. Check all soldered joints carefully under a good light. Re-solder any that look suspicious. Check that all components are in their correct position. Are the electrolytic capacitors and diodes the right way round?
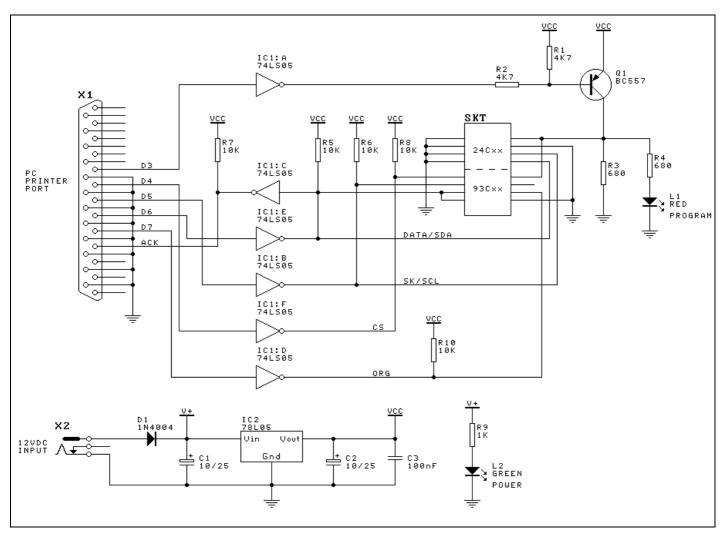
Web Address & Email

You can email us at **sales@electronickits.com** if you have any problems or requests. Information on other kits in the range is available from our Web page at:

http://www.electronickits.com

The kit and software was designed by Frank Crivelli at Ozitronics (**frank@ozitronics.com**).

PARTS LIST - KIT 151

Resistors (0.25W carbon)
680R.............................R3,4.............................2
1K.................................R9.................................1
4K7...............................R1,2.............................2
10K...............................R5,6,7,8,10...................5

Capacitors
100nF monobloc ....C3.................................1
10uF 25V electrolytic.........C1,2.............................2

Semiconductors
1N4004.........................D1.................................1
BC557, PNP transistor ....Q1.................................1
74LS05.........................IC1 1
Hex Inverter with Open-Collector outputs
78L05 ....IC2 1
5V regulator, TO-92
LED, 5mm, Red ....L1.................................1
LED, 5mm, Green ....L2.................................1

Miscellaneous
D25 connector, male ....X1.................................1
Right Angle, PCB mounting
2.5mm DC jack ....X2.................................1
16-pin IC socket ....for SKT 1
14-pin IC socket ....for IC1 1
PCB, K151 1

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How to install 'eeprog.exe'

This is a detailed explanation of how I have installed 'eeprog.exe' in my Windows 98SE system. There are slight differences with Windows 95 and 2000 but it gives you an idea of how to do it. You have eeprog.exe on your system somewhere: in drive A: or the download subdirectory. Open Windows Explorer

1. Under Program Files make a subdirectory (or folder) EEPROM.
2. Move 'eeprog.exe' from wherever it is to the folder EEPROM.
3. Right click on some blank space on the desktop and select "New → Shortcut".
4. Click on the "Browse" button and find 'eeprog.exe' on your hard disk in the above mentioned folder
5. Click on/select eeprog.exe, click "open". Click "Next", "Next", select and icon then click "Finish".

You should now have the icon you selected on your desktop. If you want to change the icon's name then right click on it and select "Rename". Rename it how you want. I left mine as it was.

If you are using LPT1: then just click on the icon to start. If you are using LPT2: then you can right click on the icon, open the Properties, go to programs and add "/2" at the end of eeprog.exe in the "Cmd Line " box. EEPROG/n with n = 1 to 4 is supported.

Place the hex files you want to program in the EEPROM subdirectory. That way they are all in one place and the eeprog.exe program can find them most easily.

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