

# EPE PIC TUTORIAL BOARD

## SUPPLIED BY MAGENTA ELECTRONICS

We are delighted to be able to supply the board to accompany this new series which sets out to introduce the PIC 16C84 to those new to using programmable devices. The series has been written to be followed in 'bite sized' pieces with simple programming and experimental work at each stage.

### The Magenta Board

The Magenta board differs from the EPE board published in the March 1998 issue in several ways. In particular, it has been improved by the addition of a component layout 'screen print' on the upper surface, and a solder resist mask on the track side. We have also changed to a different type of slide switch which is much less fiddly to operate than the ones specified - and makes the price more competitive. There are minor changes to the track layout and a couple of extra wire links but the major components are positioned as before, and the board performs perfectly to the specification.

### ZIF Socket

At the time of writing, the original design allowed for an optional 24 way wide ZIF socket on the board as well as the standard 18 pin socket. We have not been able to source a good 18 pin socket for a sensible price, and so have adopted a more versatile approach using a universal 24 way ZIF socket and a small daughter board which connects to the motherboard via a ribbon cable. This has several advantages. In normal use, the board will be fitted with a single PIC device which will be programmed via the computer link and will not need to be removed from the turned-pin socket on the board. When a number of devices are to be programmed, the ZIF adaptor can be plugged in, and any number of chips programmed and tested via the ZIF socket. The extension lead allows the ZIF socket to be used with other boards - for example the Magenta 'Simple' and 'Super' PIC programmers, so that a single ZIF socket can serve several applications. Finally the 18 pin to 18 pin lead can be used to connect between a PIC development board and a 'target' board when developing projects.

### Construction

First check the components against the parts list. The Note that C9 has been increased to 10uF for more output at lower frequencies. The component layout printed on the board must be used rather than the magazine drawing as there are some differences. Begin by fitting the four pillars to the board with the screws provided. This allows components to be inserted much more easily as there is clearance for their leads underneath the board. Next fit the terminal pins in the area around TR1 - 4, around VR2. The pins should be snapped off from the strips leaving the square plastic sleeve intact. Four groups of 3 pins can be used for the emitter and base connections to TR1-4 by pull out the centre pin and using the outside two. All of the pins are fitted from the top of the board and the short length soldered on the copper track side. The pins for the A and B ports should be snapped off in strips as required.

Use the length of tinned wire to make all of the links. For a neater job, stretch the whole length of tinned wire slightly before cutting it up - this straightens it beautifully. Check that all of the links are in position and then insert all of the resistors, the diodes, and the capacitors. Be careful to identify the polarity stripe on the diodes and on C3, 6, 7, and 9 - the line with '-' signs is the negative.

Fit the sockets for the four dip switches and the turned pin socket for IC1. Note that the notch designating the pin 1 end is to the centre of the board. Fit the four transistors, the push button switches, and the four strips of connecting pins. The slide switches must be prepared for fitting by removing the metal pins on the ends of the body. This can be done either with a sharp pair of flush cutting nippers, or by flexing the pins with pliers until they break off. The switches can then be mounted to the board. Solder just the centre pin first, and then adjust the position of the switch so that it is sitting squarely in position before soldering the other two pins. The Voltage regulator is a tight fit in its holes and may need rocking carefully from side to side to sit down in position - note that the metal tab is towards the centre of the board.

Fit the crystal, capacitors C1 and C2, and the presets - taking care to identify VR2. The stereo socket SK2. should be fitted carefully so that it lies level on the board.

The special l.e.d.s lie flat on the board and look much nicer than a wobbly row of stand-up ones. they are fitted in the two wider spaced holes - **the plain lead is the + and goes nearer to the + sign on the layout.** The lead with the bar across (which looks like a + but isn't) is the negative - I know - I put them in backwards!

**Always be careful handling l.e.d.s** - they are not particularly static sensitive, but the transparent plastic is not strong, and it is easy to damage them by careless bending or by soldering heat.