

Technical Description of the Microstim

1. Power supply
 - a. VR1 is a 5v voltage regulator supplied from a 9v Alkaline battery
 - b. During pulse delivery up to 90 volts is delivered into 1kohm impedance it is possible to pull the battery down
 - c. C5 :C2 & C3 are reservoir capacitors
 - d. The current arrangement was chosen due to the Value in mfd required and the physical size of capacitors available at the time of design
 - e. Values of C8 & C4 have been chosen to meet the criteria of various IC regulator manufacturers
 - f. C6 & C2 can be combined but must be zero leakage or they will drain the battery even when not in use.
 - g. C4 is recommended to be as near to the PIC as possible
2. Function selection
 - a. The four switches each control one function
 - b. To prevent the unit being inadvertently left switched on power is only supplied when a switch is pressed
 - c. R7.R8.R9.R10 are pull down resistors which enable the PIC to determine which switch has been pressed
3. Mode controller
 - a. The oscillator is a standard PIC design
 - b. Two small capacitors have been re-added to the crystal in line with the PIC manufacturers datasheet
4. Battery level Indicator
 - a. This consists of a tri state LED
 - b. When the battery voltage is greater than 7.8 volts the green LED is illuminated gradually turning to Red as the voltage falls to 5 volts
5. Current Detection
 - a. It is necessary to ensure that good conductivity (about 1Kohm) is experienced through the patient during activation..
 - b. R6 and ZD3 are used so that when sufficient current passes through ZD3 Pin 1 on the PIC goes low and generates an output on pin 8 activating and Audio indicator
 - c. C1 was found to be necessary for noise filtering
6. Power amplifier
 - a. Pulses from pin 9 on the PIC are fed via TR1 & TR2 into a step up transformer comprising T1,T2 generating up to 90v
 - b. The easiest check for the microstim is to turn gain to maximum and place a mains neon across the output.
 - c.
- 7.