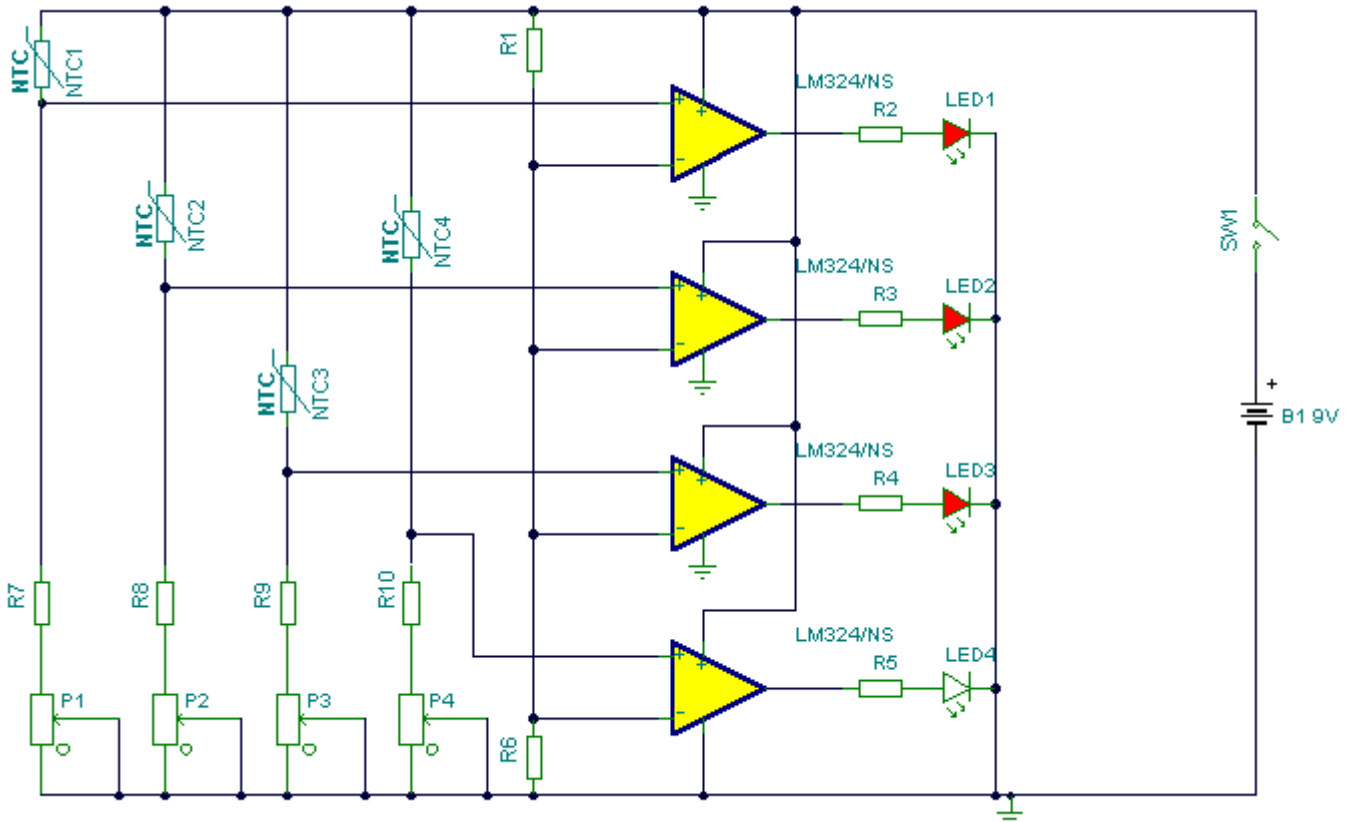# Hot Water Tank Indicator

Construction:

I used masking tape to stick the bead thermistors to the tank. Wires were soldered and insulated at the
thermistors ends. A plastic box was used to house the circuit. Battery life will probably be 2 - 3 years
depending on how often you use the push switch, SW1.

Notes:

Save fuel bills and the economy of the planet with this electronic circuit. SW1 is a press button switch which
allows you to view the level of hot water in a hot water tank. Thermistors NTC1-4 should be spread evenly
over the height of the tank. I placed NTC1 roughly 4 inches from the top of my tank and the others spaced
accordingly.

Calibration:

With a full tank of hot water adjust P1-4 so that all LED's are lit. As hot water rises, the sensor at the bottom
of the tank will be the maximum level of hot water. "Hot" can be translated as 50C to 80C the presets P1-4
allow adjustment of this range.

Parts:

I have used a quad version of the LM324 but any quad opamp can be used or even four single LM741's.

R2-R5 I used 330ohm ,but not critical.

NTC1-4 The thermistor resistance governs the value of R1 R6 and the presets. I used a thermistor from
the Maplin catalogue. Cold resistance was around 300K, hot around 15k

R7-10 series resistance, to prevent a short circuit only needed if your thermistors resistance is several ohms

P1 - P4 I used 100k as this range corresponds to the resistance of the thermistor at the required water temp

R1 & R6 are equal and bias the supply voltage to half supply. I used R1=R6 = 100k