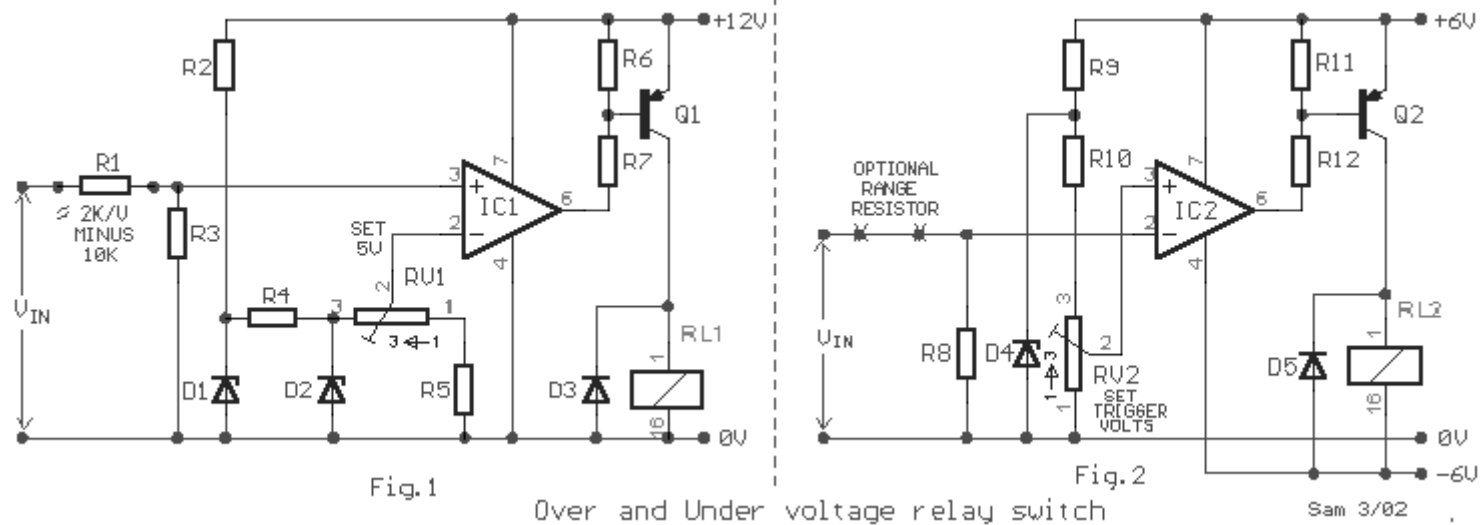


## Over and under voltage switch with relay



In Fig.1 A precision DC under-voltage relay switch. The opamp is used as a voltage comparator, with a reference voltage applied to pin 2 and the test voltage applied to pin 3: the relay turns on when the pin 3 voltage exceeds that of pin 2. The circuit can be made to trip at any voltage in excess of 5 volts by suitable choice of R1 value. In Fig. 2 An over-voltage switch that can be used to trip at any pre-set voltage in excess of about 10 mV. The input voltage can be connected directly to pin 2 if trip values in the range 10mV to 3Volts are required. For voltages in excess of 3 Volts, a suitable range resistor must be connected in the position shown, to keep the pin 2 Voltage drive to suitable level. The circuit can be converted to an under-voltage switch by transposing the pin 2 and pin 3 connections of the op-amp. The circuit can be used as an AC voltage switch by first rectifying the AC input signal.

### Part List

R1=2Kohm/V minus 10Kohm

R6-11=2.2Kohm

D3-5=1N4001

R2-9-10=1Kohm

R7-12=4.7Kohm

D4=3V3 0.5W Zener

R3-8=10Kohm	RV1-2=10Kohm pot.	IC1-2= <b>LM741</b>
R4=1.2Kohm	D1=6V8 0.5W Zener	Q1-2= <b>BC214</b>
R5=47Kohm	D2=5V6 0.5W Zener	RL1-2=12V >120ohm Relay

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