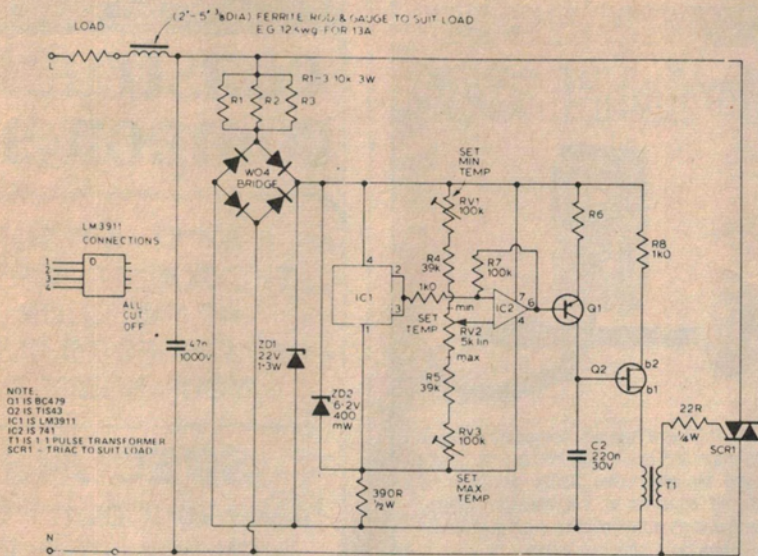


# Ideas for experimenters



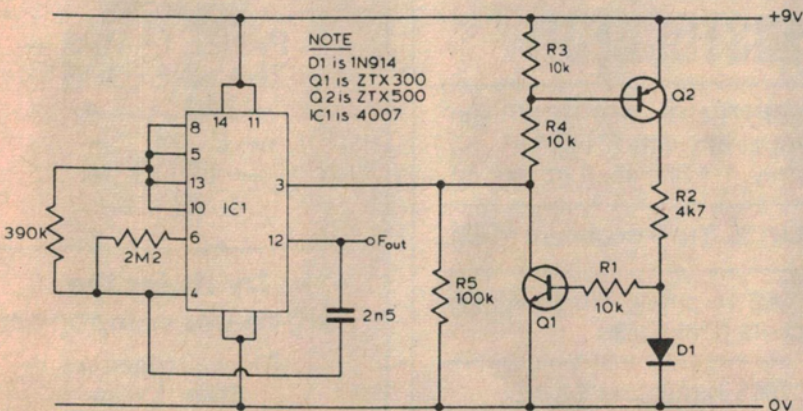
## Temperature Control

This circuit provides full phase proportion control of a heater, infrared lamp etc, uses no expensive transformers for its own power, and is extremely sensitive.

The LM3911 sensor is connected to the circuit via a 3 core cable, and enclosed in a rubber sleeve to enable it to be used as a probe. The output of the LM3911 varies by 10 mV/°C and the minute change is amplified by the

741. Any increase in temperature will increase the output of the 741 which will lower the base current through Q1 and so reducing the constant charge current with temperature will alter the time taken for the UJT to fire, changing the phase angle of the power to the load.

The 5k lin pot is set to the temperature required and is linear over its entire range. The upper and lower limits of this control can be changed by adjusting the 100k presets.



## Temperature to Frequency Converter

This circuit uses the fact that when fed from a constant current source, the forward voltage of a silicon diode varies with temperature, in a reasonable linear way.

Diode D1, and resistor R2 form a potential divider, fed from the constant current source. As the temperature rises

the forward voltage of D1 falls tending to turn Q1 off. The output voltage from Q1 will thus rise, and this is used as the control voltage for the CMOS VCO. With the values shown, the device gave an increase of just under 3 Hz°C<sup>-1</sup> (between 0°C and 60°C) giving a frequency of 470 Hz at 0°C.