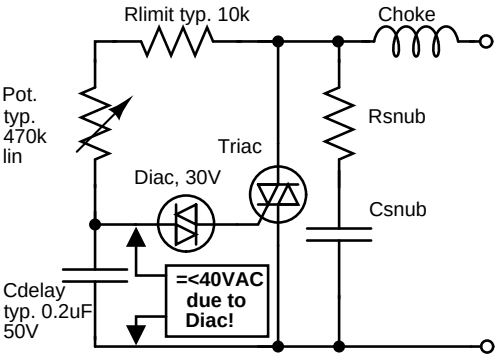
Light dimmer applications in automation

Version: 1.0 09.2011 (C) (_abc_ @ irc://freenode.net/#electronics)

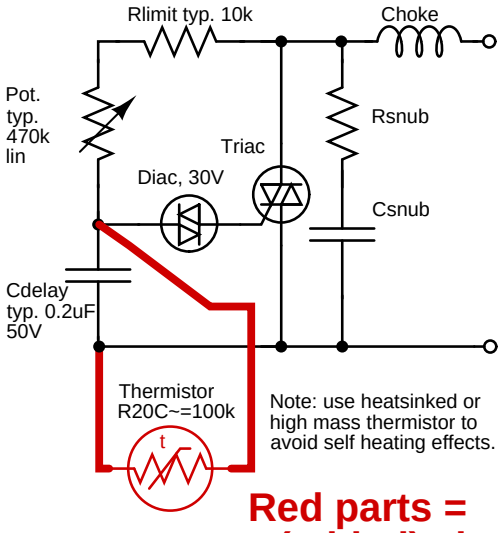
Creative use of the relatively low voltages present in the control side of any average light dimmer for simple automation.

Typical Light Control Dimmer Schematic



This is the original schmatic usually found in low cost lamp dimmers. The 30V diac and the 470k potentiometer are the key interesting parts for this application. The diac limits peak ac voltage on Cdelay to less than 40V at all times. This makes the use of low voltage sensors possible.

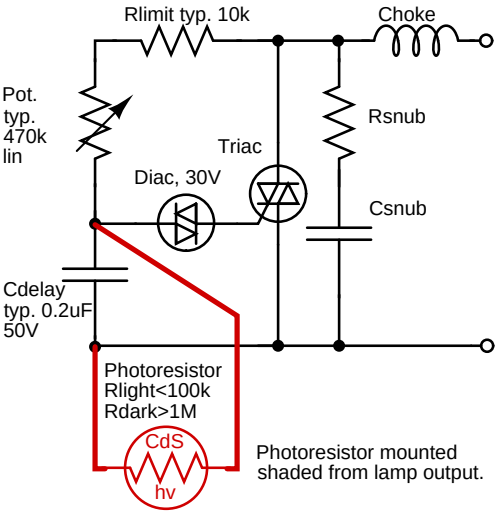
Proportional thermostat



Note: use heatsinked or high mass thermistor to avoid self heating effects.

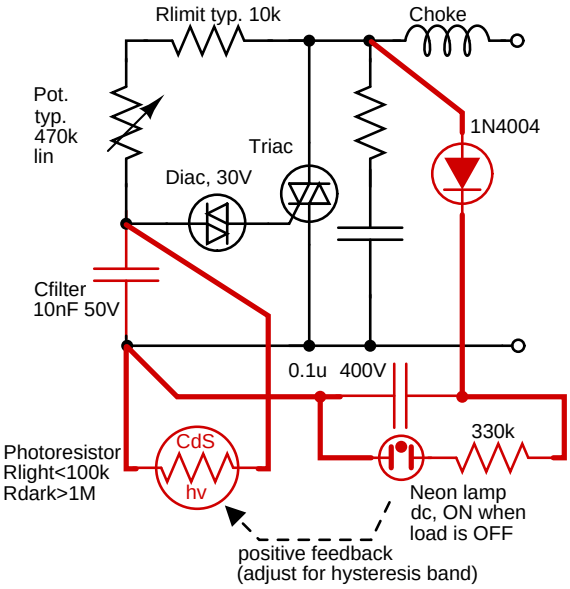
Red parts = new (added) circuit

Proportional "fill in" light sensor



Photoresistor mounted shaded from lamp output.

Dusk light switch



Note: circuit lights Neon lamp when load is off, with DC voltage rectified by 1N4004, and filtered by 0.1uF/400V cap.

Neon lights CdS sensor providing positive feedback until darkness turns CdS high impedance and triac is fired, then neon voltage drops to 0 and it goes off, providing positive feedback (darkness).

The circuit acts as a hysteresis switch. The light may blink at dusk/sunrise if not enough positive feedback is provided. The blink rate is set by 0.1uF cap and 330kOhm resistor. Adjust cap to change.

WARNING:ALL PARTS OF ALL CIRCUITS CARRY LETHAL MAINS VOLTAGE AND MUST BE INSULATED AGAINST HUMAN CONTACT AND WEATHER.

NO WARRANTY - YOU USE THESE CIRCUITS AT YOUR OWN RISK.