

Night Light Switch

By G8MNY

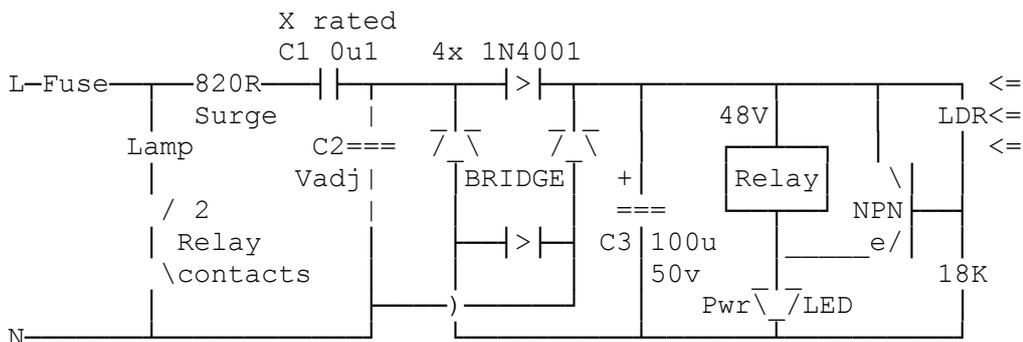
(New Jan 16)

(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

This is one of my simple designs to turn on a low power mains lamp when dark.

The Light Dependant Resistor sensor of course, must not see the economy lamp or other lights if it is to work properly.

CIRCUIT



HOW IT WORKS

The small value of C1 a mains X rated Cap is used as high impedance current source ( $X_c = 33k\Omega$ ) to just feed enough current into the bridge rectifier to operate the relay. So C1's value all depends on your relay ratings, (C2 50V can be added to reduce the voltage as an alternative) my relay was a 48V 7mA 7k $\Omega$  coil. The 100uF C3 gives a slow operation of a second or so, & also damps out any mains surges with a flame proof 820R surge R too.

The NPN was a BC337 for my >7mA @ 50V needed to drop the high impedance PSU below the relay hold voltage, but any transistor will do for your V & I & ratings & high current gain. If higher currents are needed, a darlington or pair of transistors may be used for low light sensitivity.

Day light striking the LDR causes it to change from a few 10s of Meg ohms down to less than 10k $\Omega$ . The NPN is then turned on via the sensitivity pot, & the relay supply voltage gets reduced to just the few volts & then the relay releases turning the lamp OFF. There is a large hysteresis to this ON/OFF action, so slight lamp light pickup is not too much problem. The 18K can be changed for different sensitivities.

The power LED lights all the time, brighter when in daylight. Total Power is quite low due to the use of C1 as the "power less dropper".

CONSTRUCTION & TESTING

This is a 230V MAINS circuit! Use an isolated supply for testing, & still keep 1 hand behind your back when you fiddle with it! As drawn most of the circuit is only at +/- 50V AC above Neutral.

It must be housed in a proper insulated box & connections insulated too, or use an earthed metal Box etc. Extra precautions needed for outdoor use, eg. sealing holes & (or) drilling holes to let water out & box breath etc.

QRM FREE

With no Mains switching Traic, there could be loaded noise with this unit. (Other than what the Economy lamp makes!)

See my TECH bul on "Christmas Mains Light Chains" & "Fairy Light Flasher"

Why don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP