

Automatic Mast Light Switch

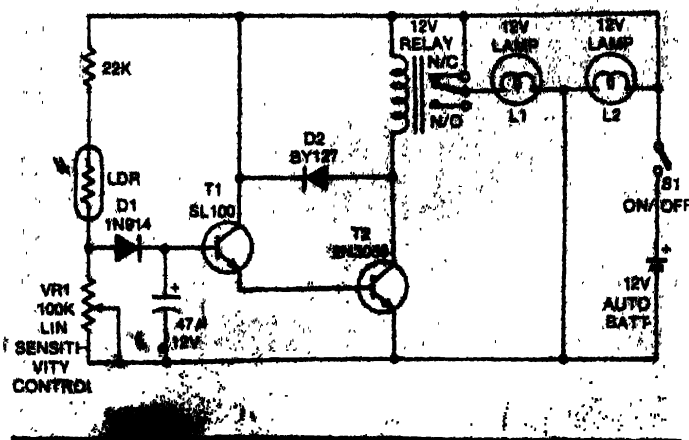
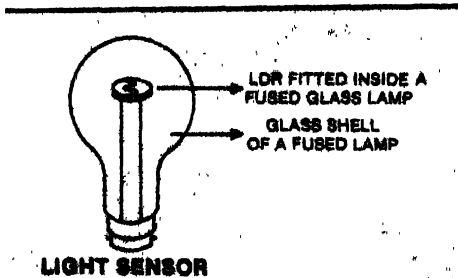
There are various ways of designing an automatic mast light switch, since several light sensitive devices are available in the market, such as LDR (light dependent resistor), photo diode, photo SCR and photo transistor etc. The circuit explained here makes use of LDR.

The 'dark' resistance of the LDR is very high and it reduces to a few ohms when light falls over it.

During day time, the voltage drop across LDR is very less and the voltage at point 'a' is high and hence transistor T1 remains in conduction. As long as T1 is conducting, T2 does not conduct and the relay in its collector circuit remains de-energised.

After sunset, as the light level starts falling, the voltage across LDR starts building up and the voltage at point 'a' starts falling. At a particular moment, depending upon the setting of the potentiometer VR1, T1 stops conduction and therefore T2 starts conducting, and hence relay RL1 in its collector circuit gets energised. This relay with its 'a2' contact actuates the contactor RL2 which switches on mast light. LED D2 gives an indication of 'mast light on' with 'a1' contact of the relay RL1.

Capacitor C2 delays the switching on and switching off operation of relay RL1 by few seconds. This delay is necessary in order to avoid the false operation of the mast light



due to incidental interruption of light such as flying of a bird in the vicinity of the LDR sensor. Capacitor C2 also prevents the chattering of the relay near the threshold light level.

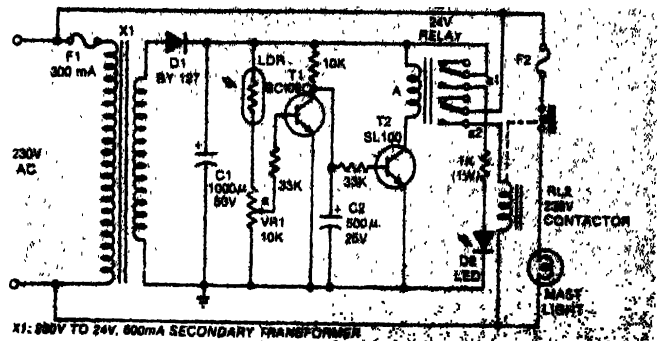
LDR may be mounted in a fused ordinary light bulb, after removing the filament carefully from its inside. The LDR may be soldered directly to the filament leads, as shown in the figure, and the base can be fitted back in the glass shell using Araldite. This arrangement is very convenient to mount the sensor in a bulb holder, pointing towards sky. The replacement of the sensor, whenever necessary, also becomes very easy due to this arrangement.

K.A. SHAIKH

Electronic Auto Dipper

In this rapidly changing scientific world, everything is heading towards automation to relieve the human beings of some of the problems. Of late, many a gadget has been designed for the automobiles. This circuit controls the 'light dipper' action for driving at night.

When two vehicles approach each other, the drivers use mechanically operated dippers to avoid a glare to the oppo-



site driver. In this project, the dipper action is made automatic. The circuit is quite simple.

The LDR used in this circuit senses the light from an approaching vehicle and activates the relay if the light intensity increases beyond a certain threshold level. The LDR is enclosed in a small case having a transparent glass in front and is fixed about 5 cms below the right headlight (in case of cars etc). The remaining circuit module can be located at some other suitable place.

The connections of head lamp and relay are shown in the circuit diagram. The relay used in the circuit has a 12V, 300mA coil, and is 'normally-closed' type. VR1 is the sensitivity controller.

When the circuit is activated and the headlight beam is dipped, there will be a slight time delay before it returns to its

'normal' position. The delay has been introduced to give sufficient time for the opposite vehicle to pass through.

The circuit functions very well on highways, but within the city limits excess traffic and streetlight sources can cause unnecessary activation of the circuit. To avoid this the on-off switch is provided so that in city you may just switch off the unit.