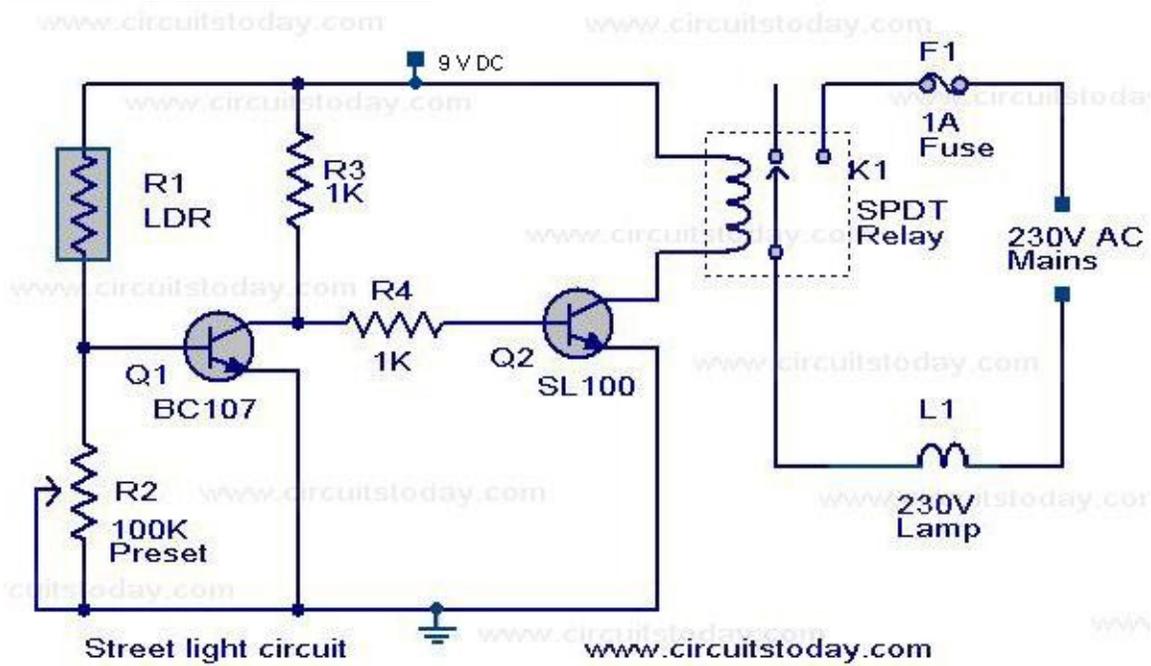


# Automatic Street Light



Submitted By:

## **Introduction**

Automatic Streetlight needs no manual operation for switching ON and OFF when there is need of light. It detects itself weather there is need for light or not. When darkness rises to a certain value then automatically streetlight is switched ON and when there is other source of light i.e. day time, the street light gets OFF. The sensitiveness of the street light canal so be adjusted. In our project we have used four L.E.D for indication of bulb but for high power switching one can connect Relay (electromagnetic switch) at the output of pin 1 of I.C LM358 Then it will be possible to turn ON/OFF any electrical appliances connected all the way through relay.

## **PRINCIPLE:**

2)

This circuit uses a popular timer I.C LM 358. I.C LM358 is connected as comparator with pin-6

connected with positive rail, the output goes high(1) when the trigger pin 3 is at lower then voltage level at pin no 2. Conversely the output goes low (0) when it is above pin no 2 level. So small change in the voltage of pin-2 is enough to change the level of output (pin-1) from 1 to 0 and 0 to 1. The output has only two states high and low and can not remain in any intermediate stage. It is powered by a 12V power supply. The circuit is economic in power consumption.

Pin 4 is ground and pin 8 is connected to the positive supply and pin 1 is grounded.

To detect the present of an object we have used LDR and a source of light. LDR is a special type of resistance whose value depends on the brightness of the light, which is falling on it. It has resistance of about 1 mega ohm when in total darkness, but a resistance of only about 5k ohms when brightness illuminated. It responds to a large part of light spectrum.

We have made a potential divider circuit with LDR and 10K variable resistance connected in series. We know that voltage is directly proportional to conductance so low voltage we will get from this divider when LDR is getting light and high voltage in darkness. This divided voltage

is given to pin 2 of IC LM358. Variable resistance is so adjusted that it crosses potential of 1/2 in darkness and fall below 1/2 in light.

Sensitiveness can be adjusted by this variable resistance. As soon as LDR gets light the voltage of pin 2 drops of the supply voltage and pin 3 gets high and LED or buzzer which is connected to the output gets activated.

## COMPONENTS

- a) **Power Supply:** For 12v power supply we can use 12 v step down transformer, bridge rectifier, 12 v regulator.
- b) **Switch:** Any general purpose switch can be used. Switch is used as circuit breaker.
- c) **L.D.R:** (Light Depending Resistance) it is a special type of resistance whose value depends on the brightness of light which is falling on it. It has resistance of about 1 mega ohm when in total darkness, but a resistance of only about 5k ohms when brightness illuminated. It responds to a large part of light spectrum.
- d) **L.E.D:** A diode is a component that only allows electricity to flow one way. It can be thought as a sort of one way street for electrons. Because of this characteristic, diodes are used to transform or rectify AC voltage into a DC voltage. Diodes have two connections, an anode and a cathode. The cathode is the end on the schematic with the point of the triangle pointing towards a line. In other words, the triangle points toward that cathode. The anode is, of course, the opposite end. Current flows from the anode to the cathode. Light emitting diodes, or LEDs, differ from regular diodes in that when a voltage is applied, they emit light. This light can be red (most common), green, yellow, orange, blue (not very common), or infra red. LEDs are used as indicators, transmitters, etc. Most likely, a LED will never burn out like a regular lamp will and requires many times less current. Because LEDs act like regular diodes and will form a short if connected between + and -, a current limiting resistor is used to prevent that very thing. LEDs may or may not be drawn with the circle surrounding them.
- e) **Variable resistance:** (Potentiometer) Resistors are one of the most common electronic components. A resistor is a device that limits, or resists current. The current limiting ability or resistance is measured in ohms, represented by the Greek symbol Omega. Variable resistors (also called potentiometers or just "pots") are resistors that have a variable resistance. You adjust the resistance by turning a shaft. This shaft moves a wiper across the actual resistor element. By changing the amounts of resistor between the wiper connection and the connection (s) to the resistor element, you can change the resistance. You will often see the resistance of resistors written with K (kilohms) after the number value. This means that there are that many thousands of ohms. For example, 1K is 1000 ohm, 2K is 2000 ohm, 3.3K is 3300 ohm, etc. You may also see the suffix M (mega ohms). This simply means million. Resistors are also rated by their power handling capability. This is the amount of heat the resistor can take before it is destroyed. The power capability is measured in W (watts). Common wattages for variable resistors are 1/8W, 1/4W, 1/2W and 1W. Anything of a higher wattage is referred to as a rheostat.
- f) **P.C.B:** (Printed Circuit Board) with the help of P.C.B it is easy to assemble circuit with neat and clean end products. P.C.B is made of bakelite with surface pasted with copper track-layout. For each components leg, hole is made. Connection pin is passed through the hole and is soldered.

## **Circuit Diagram**

