TECHNOLOGICAL UNIVERSITY (TOUNGOO)

DEPARTMENT OF ELECTRONIC ENGINEERING

REMOTE CONTROL WITH TORCHLIGHT

STUDENTS' PROJECT
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Introduction

The remote control with torchlight circuit is a circuit which operates by shining a torch on it from remote point. When a person produce torchlight one, the first output of the circuit is turned on. If another one is tought, the circuit is switch off. This circuit is used in any low current load device. For example, fan, fluorescent light, TV and Casset etc.

Circuit Operation

Remote control with torchlight circuit consists of four main parts. They are (1) power supply (2) 555 monostable circuit (3) 4017 decade counter circuit and (4) transistor switch.

Firstly, the input voltage of the source (220 V) is reduced to (12V) alternating current by step-down transformer. The output of the transformer is alternating current. So, we must change alternating current into direct current by using full wave bridge rectifier circuit.

The output of the bridge rectifier is not static. A power supply filter ideally eliminates the fluctuations in the output voltage. Filtering is necessary because electronic circuits require a constant source of dc voltage and current to provide power and biasing for proper operations. Filters are implement with Zener diode. LDR is used as a light sensitivity in this circuit. LDR is a resistor that sense easily to light and these resistance is inversely proportional to light intensity. At the condition that light do not pass onto the LDR, the resistance of LDR is about 1 MΩ and these resistance will be about 100 Ω when most of the light passes on it.

IC_1 is 555 timer IC and it is used a monostable circuit. If the light do not pass onto the LDR, since the resistance of LDR is great, the happened voltage on the LDR is almost supply voltage. In that condition, the output pin 3 of IC_1 is at the low base. If we look the surface of LDR by pressing the torchlight , the voltage of pin 2 will also decrease until below to one-third of the supply voltage (<1/3 Vcc) since the resistance of LDR decreases. So, the base of output pin 3 of IC_1

Remote Control with Torchlight Circuit

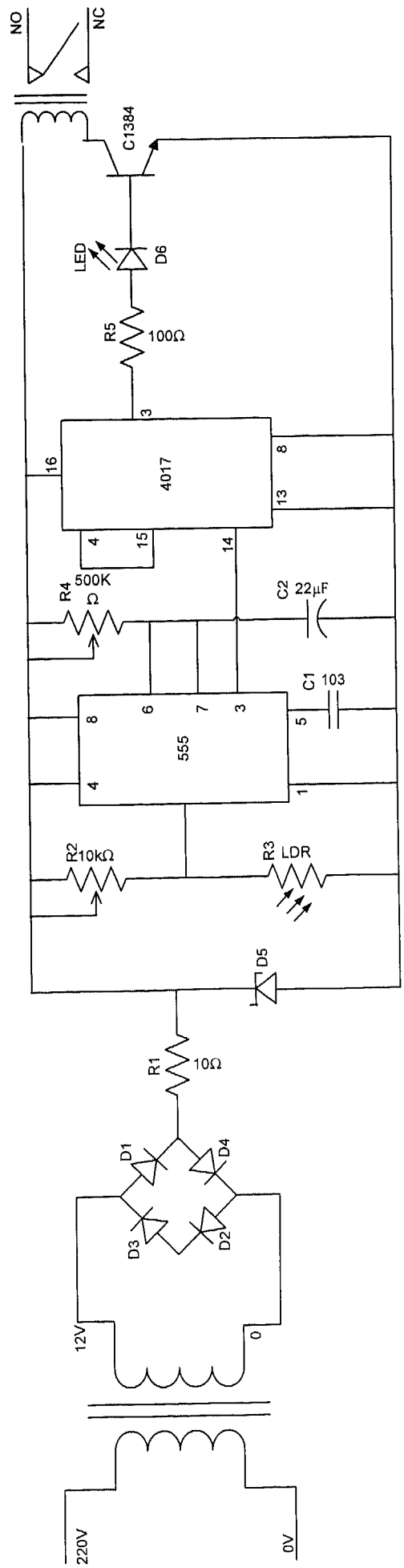

Figure . Remote Control with Torchlight Circuit

Components List

Semiconductor

D_1 to D_4 1N 4007	4
D_5 (Zener Diode) 12V	1
D_6 LED	1

Integrated Circuits

IC_1-555	1
IC_2-CD 4017	1

Resistors

R_1(10Ω)	1
R_2(10k, VR)	1
R_3(LDR)	1
R_4(500K, VR)	1
R_5(100Ω)	1

Capacitors

C_1 (103)	1
C_2 (22μF/16V)	1

Miscellaneous

Transformer (220 to 12V)	1
Relay (12V)	1