

Automatic Headlight for Solar Assisted Electric Bicycle

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Abstract— The main purpose of this project is to provide automatic headlights for a solar assisted ebike at feasible cost. This project contains circuit design & implementation for automatic headlights. This project helps to improve the reliability of any vehicle and provide efficient operation.

Key words: Electric Bicycle, Automatic Headlight

I. INTRODUCTION

As per the advancement in the technology in the automotive industry, changes are being implemented regarding safety regulations. Therefore our government of india is decided to make automatic headlights mandatory for all kinds of vehicles from april 2017. This alone explains the importance of automatic headlights and hence significance of our project so we are taking this step for increasing the reliability of our vehicle right now.

At night when there is no sunlight it senses reduction in intensity of light, turning the headlight ON, making the travelling safer and reliable.



Fig. 1: Spot Light for automatic headlight for solar assisted electric bicycle

II. COMPONENTS USED

- 1) One IC CA3140
- 2) Five resistors(3×100k,560k,1k)
- 3) One capacitor(10μf)
- 4) Light detecting resistor
- 5) One transistor(BC548)
- 6) Variable resistor(100k)

III. WORKING

Here IC CA3140 is used in the circuit which acts as an OPAMP. Pins 2 and 3 of this IC compares the voltage and works as a potential divider in pins 2 and 3. The LDR and VR1 makes one potential divider network which provides a variable voltage at pin 2 and the second one is built around pin 3 with the help of R1 and R2 which will provide half of the supply voltage to pin 3.

During daytime the resistance offered by the LDR is low that's why the voltage at pin 2 is higher than pin 3.

This makes the output of pin 6 low and transistor goes to cutoff state and bulb is off.

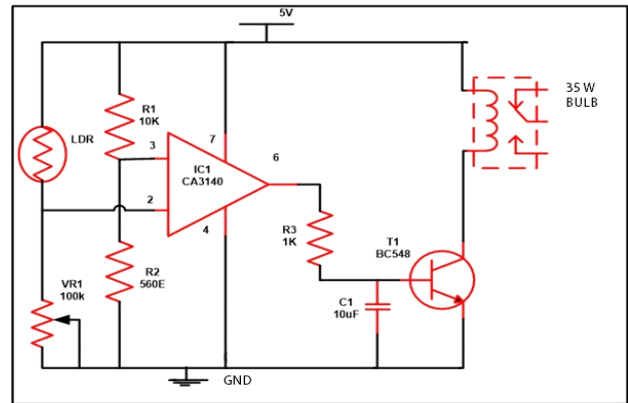


Fig. 2: Circuit diagram for automatic headlight for solar assisted electric bicycle

During Night time the resistance offered by the LDR is high that's why the voltage at pin 2 is now lower than pin 3 making pin 6 output high this causes transistor to conduct and bulb glows.

IV. Advantages

- 1) Cost effective design
- 2) Improved visibility on road
- 3) Easy to manufacture
- 4) Highly reliable circuit
- 5) Low maintenance and Long life

V. CONCLUSION

Thus automatic headlight plays very crucial role in the safety and reliability of any vehicle. Hence improves the operational reliability of the vehicle.

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