

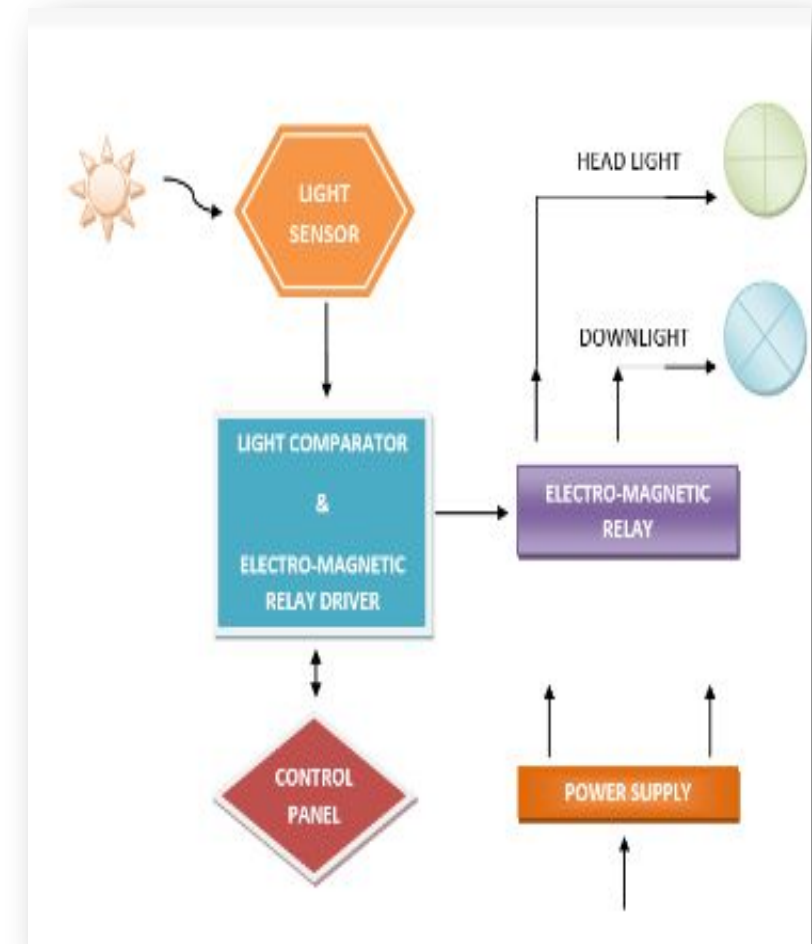
SNS COLLEGE OF ENGINEERING
An Autonomous Institution

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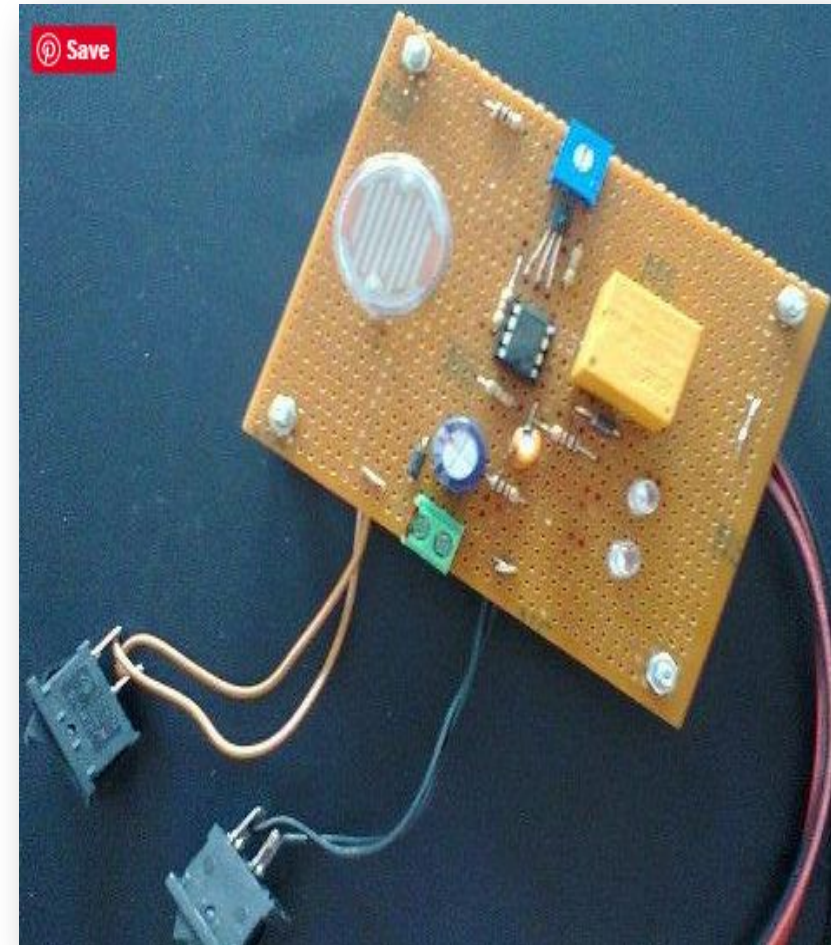
Requirement of starting for Automobiles

- When a vehicle is driven on the highway at night, it is required that light beam should be of high density and should illuminate the road at a distance sufficiently ahead.
- However, when a vehicle coming in the opposite direction approaches the vehicle with a high-beam headlight, driver of that vehicle will experience a glare, which may blind him.
- This dazzle effect is one of the major problems faced by a driver in night driving. To avoid this impermanent blindness, a separate filament is usually fitted in the “dual-filament



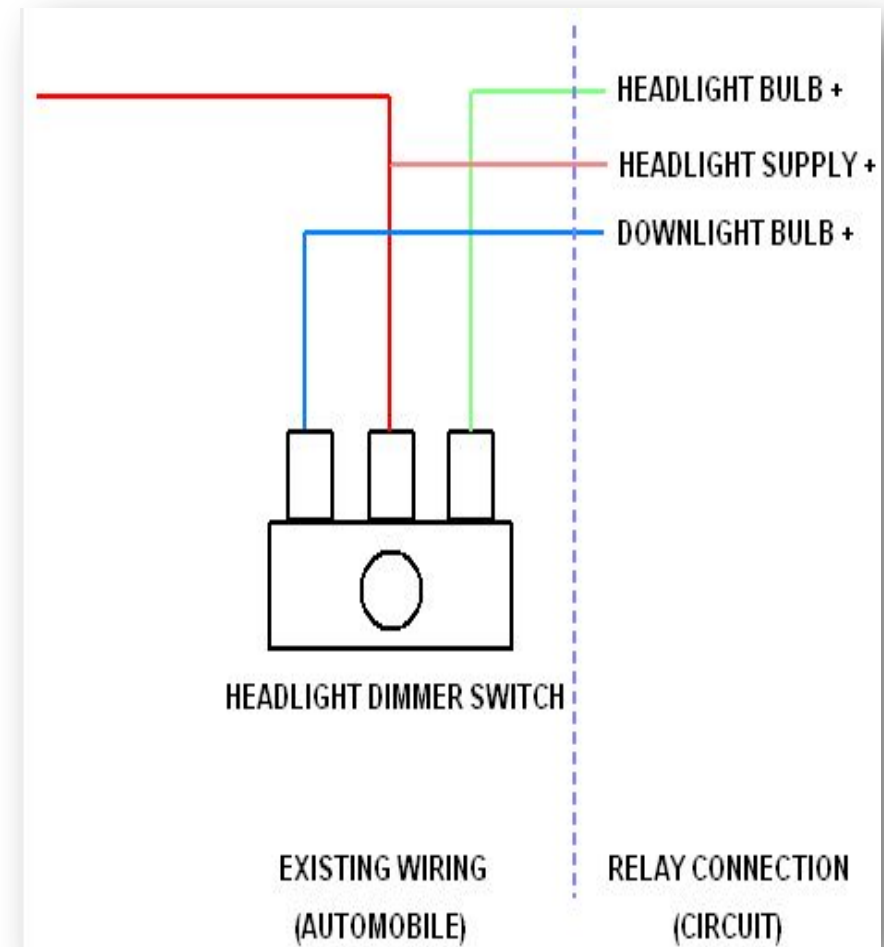
Prominent Features

- 12V automobile battery powered automatic switching circuit with negligible current consumption in standby mode
- Reliable and weatherproof light sensor module (Cds photocell)
- Independent variable control to set the “light detection sensitivity to avoid false triggering caused by the influence of other light sources like streetlights
- Optional selector switch for “Automatic Signaling Mode” (ASM).
- “Energy Saving Mode” – If the circuit is in active state, by default, headlights automatically goes off when the vehicle enters in a well-lighted area.



Working of the circuit

- This circuit is built around the popular timer chip NE555 (IC1). Here IC1 is configured as a gated-astable multivibrator running at a frequency of about 1.5 Hertz (duty cycle 75%), determined by the values of components R1, R3 and C1.
- The whole circuit can be directly powered from the 12V automobile battery.
- When power switch S1 is turned to “on” position, 12VDC supply from the battery is fed to the whole circuit through polarity guard diode 1N4007 (D1).
- Capacitor C3 (100uF/25V) is a traditional buffer capacitor to improve the circuit stability



LED Driver for Automotive Applications

- The functionality of the AFS depends on producing complex light patterns at a fast rate. LEDs exhibit an illumination rise time about two times faster than that of incandescent sources.
- Besides, LEDs are more power-efficient and offer a superior clarity of white light. Due to these advantages, they are widely utilized in the automotive industry.
- To operate the LEDs, we need special circuitry referred to as LED drivers. The driver should provide the LEDs with a constant current to preserve the light color.



LED Matrix Manager

- The driver should provide the LEDs with a constant current to preserve the light color. However, we still need to dim some of the LEDs to create the different light patterns required.
- To this end, the concept of pulse-width modulation (PWM), shown in Figure 5, can be used. As you can see, the pulse width is varied to adjust the LED intensity.
- When the pulse is high, the constant current produced by the LED driver is applied to the LED. When the pulse goes to low, the current gets cut off.
- In this way, while the current applied to the LED is almost constant, we can change the pulse duty cycle to adjust the light intensity.

THANK YOU