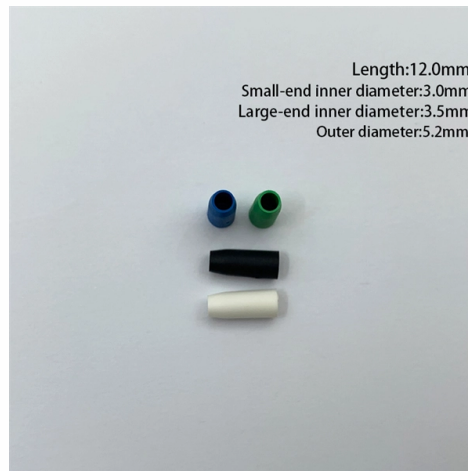


Light sensor module control AC



Overview

Light control system has been designed and constructed based on LDR sensor as the light range sensing device at night time.

Key Takeaways

You can control an AC light automatically using a light sensor module, a relay, and a microcontroller like Arduino to switch the light based on ambient light levels.

Components Needed

Light Sensor Module (LDR-based): Detects ambient light and provides analog or digital output. Relay Module: Acts as a safe switch to control high-voltage AC lights using low-voltage signals from the Arduino. Arduino or Microcontroller: Reads the sensor input and triggers the relay.

Potentiometer: Optional, for adjusting light sensitivity.

A

C Light Bulb: The load to be controlled.

How It Works

Light Detection: The LDR in the sensor module changes resistance based on light intensity. The Arduino reads this value through an analog input. Decision Logic: The Arduino compares the sensor reading to a threshold (adjustable via potentiometer) to determine whether it is dark enough to turn on the light.

Relay Activation: If the light level is below the threshold, the Arduino sends a signal to the relay module, closing the normally open (NO) contact and powering the AC light. When the light level rises above the threshold, the relay opens, turning off the light.

Safety Separation: The relay ensures that the high-voltage AC circuit is electrically isolated from the low-voltage Arduino circuit, preventing damage or injury ().

Wiring Overview

Sensor Module: Connect VCC to 5V, GND to Arduino GND, and the output pin to an analog input on the Arduino. **Relay Module:** Connect VCC and GND to Arduino, and the IN pin to a digital output pin.

Connect the A

C light to the relay's COM and NO terminals.

Ensure the A

C power is disconnected while wiring. **Arduino Logic:** Use a simple if statement to compare the sensor reading to the threshold and set the relay pin HIGH or LOW accordingly (). **Optional Enhancements**
AC Dimmer Module: Instead of a simple on/off relay, you can use an AC dimmer module to adjust brightness based on light levels.

The Arduino can output a PWM signal to the dimmer module to control the AC voltage supplied to the bulb ().

LC

D Display: Show current light levels or brightness settings. **Multiple Sensors:** For larger areas, multiple LDRs can be used to average ambient light readings.

Safety Tips

Always disconnect AC power before wiring. Use a relay or opto-isolated dimmer module to separate low-voltage control from high-voltage AC. Check voltage and current ratings of the relay and AC load.

Ensure proper heat dissipation for the relay and avoid touching exposed wires when powered (). By following this setup, you can create an automated lighting system that turns AC lights on at dusk and off at dawn, or adjusts brightness dynamically using a dimmer module.

Article Content

Automatic Light Control System Using Arduino UNO and LDR Sensor

Light control system has been designed and constructed based on LDR sensor as the light range sensing device at night time. The microcontroller (MCU) ATmega8/168/328 allows dynamic and

Arduino Code and Video for a Light Sensor Module with

In this tutorial, we will learn how to use a light sensor module to control an AC light. The project will enable the light to turn on automatically when it's dark and to turn

Automatic Room Light Controller With Arduino and PIR Sensor

In this project, we will set up an automatic light control system using Arduino. You can use Arduino UNO or any Arduino-compatible microcontroller board, such as ATtiny85.

AC Dimmer Modules with Arduino and ESP

This article delves into the details of the AC dimmer module, its features, and how to use it to control AC lights with Arduino. We'll also provide step-by-step instructions and example codes to

Light Activated /Dark Activated Switch Circuit Diagram Without Relay

A light-activated triac circuit automatically powers an AC load (like a bulb) when it detects low ambient light levels. Unlike relay-based designs, this circuit uses a triac for switching, eliminating the need for

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How to use LDR Light Sensor module to Turn ON and OFF AC bulb ...

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Lighting Control Modules Explained: Features, Types, and ...

A lighting control module manages how lights operate, turning them on or off, dimming, or automating them through schedules, sensors, or smart home apps.

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In This particular prototype or project, we control the ignition and shutdown of a light point in AC (lamp), using Arduino, a relay, a IR sensor/receiver and a IR/remote control transmitter.

AC Dimmer Modules with Arduino and ESP

Learn how to control the brightness of AC lights using an AC dimmer module and Arduino. This comprehensive guide covers module features, working principles, and example codes for

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