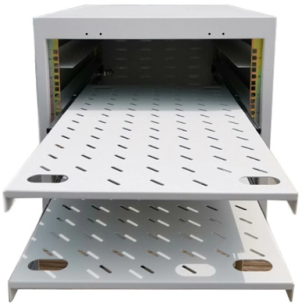
How to control the optocoupler relay module



Overview

This module allows microcontrollers to control high-voltage devices (AC or DC) using opto-isolated relays.

Key Takeaways

An optocoupler relay module allows you to safely control high-voltage or high-current loads using low-voltage signals while electrically isolating the control circuit from the load.Powering the Module
• Control Side: Connect the VCC and GND pins to the power supply of your control circuit (e.g., 5V from an Arduino or microcontroller) to power the optocoupler input circuit .

• Relay Side: Connect the JD-VCC (or relay power) and GND to the appropriate voltage for the relay coils. For modules with jumper-based isolation, opening the jumper separates the relay power from the control circuit, enhancing safety .
Connecting the Control Signal
• Attach the IN pins to GPIO pins of your microcontroller. Most optocoupler relay modules are active-low, meaning the relay activates when the input pin is pulled LOW .

• For multi-channel modules, each relay has a separate IN pin (e.g., IN1, IN2, etc.) for independent control .
Wiring the Load
• Normally Open (NO) Connection: Connect the device you want to turn ON when the relay is activated between the NO and COM terminals.

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• Normally Closed (NC) Connection: Connect the device you want to turn OFF when the relay is activated between the NC and COM terminals .

• Ensure the load voltage and current do not exceed the relay's rated specifications (e.g., 250V AC 10A or 30V DC 10A for typical 5V modules), .

Safety and Isolation

• The optocoupler provides electrical isolation between the control and load sides, protecting sensitive microcontroller circuits from voltage spikes and noise .

• For inductive loads like motors or solenoids, add a flyback diode across the load to suppress voltage spikes .

• Verify the relay coil resistance is sufficient if connecting directly to the optocoupler; most optocouplers cannot handle more than 50 mA, so the coil should typically be above 300 ohms .

Status Indicators

• Many modules include LED indicators for power and relay status, allowing you to monitor operation visually .

Example Arduino Control

#define RELAY_PIN 7void setup() { pinMode(RELAY_PIN, OUTPUT); // Set relay pin as output digitalWrite(RELAY_PIN, HIGH); // Ensure relay is OFF initially}void loop() { digitalWrite(RELAY_PIN, LOW); // Activate relay delay(1000); digitalWrite(RELAY_PIN, HIGH); // Deactivate relay delay(1000);}

This example demonstrates active-low triggering, where setting the pin LOW activates the relay .

Additional Tips

• Use current-limiting resistors (typically 220–330 ohms) when driving the optocoupler LED from a microcontroller .

• For 3.3V microcontrollers, consider a logic level converter to ensure reliable activation of 5V relay modules .

• Always double-check wiring and isolation before connecting high-voltage loads to prevent damage or hazards .

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Hi all I have a project with a 4 module optocoupler relay, controlled by an esp32 Arduino. I wired the project following

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Understanding Optocoupler Relays: A Comprehensive Guide Relays play a crucial role in electrical circuits, offering a

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Circuit : Andy Collinson Email : Description A very simple dual channel optical isolated relay module. The input can be driven from

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What''s the point of optocouplers on relay boards?

As you can see, there is a jumper to allow the Arduino 5V to be the power source for the relay, but it isn''t necessary to power the

Relay 12V with Optocupler, how to?

I haven''t used this relay module and haven''t been able to find a diagram for it, but let me offer a suggestion that might

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