

1-Channel Relay Module (5V/12V/24V) - Low Level Trigger for Arduino, ESP32, and IoT

1. Product Info

Bridge the gap between low-power microcontrollers and high-power appliances with our **1-Channel Relay Module**. This module allows your MCU (Arduino, ESP32, Raspberry Pi, etc.) to safely control AC or DC loads such as lights, fans, and heaters. Featuring a robust design with built-in isolation, it is an essential component for home automation and industrial control projects.

Opto-Isolation Design: Features a dedicated isolation slot between the control area and the load area to protect your microcontroller from high-voltage interference.

LED Indicators: Equipped with a **Red LED** for power status and a **Green LED** to indicate when the relay is active (closed).

Flexible Control: Includes both **Normally Open (NO)** and **Normally Closed (NC)** contacts to suit any circuit logic.

User-Friendly Terminals: Utilizes high-quality KF301 blue screw terminals for secure and easy wiring of heavy-duty cables.

2. Safety & Warnings

Mains Voltage Warning: If using this module to control **220V/110V AC**, please exercise extreme caution. High voltage can be fatal. Ensure the power is disconnected before wiring.

Current Limits: Do not exceed the rated current of **10A for 250V AC** or **30V DC**. Overloading the relay can lead to fire or permanent damage to the module.

Isolation Integrity: Do not remove or bridge the isolation slot on the PCB, as this maintains the safety barrier between your low-voltage controller and the high-voltage load.

Static Protection: Always handle the module in an anti-static environment to prevent damaging the sensitive SMD components.

3. Instructions for Use

Powering the Module: Connect your system power (5V, 12V, or 24V depending on your version) to the **VCC** and **GND** pins. The Red LED will light up.

The Trigger Signal (IN): This is a **Low Level Trigger** module.

When the **IN** pin receives a **0V (GND)** signal, the relay activates. The Green LED will turn on.

When the **IN** pin is **Floating** or at **High (VCC)**, the relay remains inactive.

Connecting the Load:

Common (COM): The center terminal where your power source enters.

Normally Open (NO): Circuit is broken when the relay is off; connected when the relay is triggered.

Normally Closed (NC): Circuit is connected when the relay is off; broken when triggered.

4. MAINTENANCE & STORAGE

Contact Life: Relays are mechanical components. Avoid unnecessary high-frequency switching to prolong the life of the internal contacts.

Storage: Keep in a dry, cool place. Avoid exposure to high humidity, which can cause oxidation on the terminal blocks and PCB traces.

Inspection: Periodically check the screw terminals to ensure they haven't loosened due to vibration.

5. DISPOSAL & RECYCLING

Eco-Conscious Disposal: This product contains electronic circuitry, a plastic relay housing, and copper terminals. Do not discard it with standard household waste.

Recycling: Please dispose of the module at an authorized electronic waste (e-waste) collection point to ensure valuable materials are recovered and hazardous substances are handled responsibly.

6. TECHNICAL SPECIFICATIONS

Feature	Details
Relay Voltage	5V / 12V / 24V (Choose Version)
Trigger Type	Low Level Trigger (0V / GND)
AC Load Capacity	250V / 10A; 125V / 12A
DC Load Capacity	30V / 10A; 28V / 12A
Contact Type	1 NO, 1 NC, 1 COM
PCB Features	Power & Action LEDs, Isolation Slot
Dimensions	Approx. 43mm $\times$ 17mm $\times$ 18.5mm
Mounting	2.54mm Pitch Pin Headers; KF301 Screw Terminals