Relay

Electrical Switch

Overview

A relay is an electrically operated switch. It consists of a set of input terminals for a single or multiple control signals, and a set of operating contact terminals. The switch may have any number of contacts in multiple contact forms, such as make contacts, break contacts, or combinations there of.

It works on the principle of an electromagnetic attraction. When the circuit of the relay senses the fault current, it energizes the electromagnetic field which produces the temporary magnetic field. This magnetic field moves the relay armature for opening or closing the connections. The small power relay has only one contact, and the high power relay has two contacts for opening the switch.

Key Features

- Coil Voltage: 5 V DC operation.
- High Switching Capacity: Supports up to 10 A at 250 V AC / 30 V DC.
- Compact Design: Standard PCB mountable package.
- Galvanic Isolation: Provides safe isolation between control circuit and load.
- Widely Compatible: Can be driven by microcontrollers (Arduino, STM32, ESP32, etc.) with driver circuitry.

Technical Specifications

- Coil Voltage: 5 V DC (Nominal).
- Coil Resistance: ~70 Ω (±10%).
- Contact Rating: 10 A @ 250 V AC or 10 A @ 30 V DC.
- Contact Arrangement: SPDT (Single Pole Double Throw).
- Mechanical Life: ≥10 million operations; Electrical life ≥100,000 operations.

Application

- Home automation – switching lights, fans, or appliances.
- Industrial control – motor control, pumps, and machinery.
- Smart IoT systems – relay-controlled automation projects.
- Power electronics – switching high-power loads safely.