

How to connect a relay for power protection

Article Overview

To connect a relay protection device to a power supply, wire the coil terminals to the control voltage source and the load terminals to the device being protected, ensuring correct polarity, grounding, and protective components.

Understanding Relay Terminals

A relay typically has two main circuits:

- o Control (coil) side: This low-voltage side energizes the relay. Terminals are usually labeled A1/A2 or 85/86. Applying the correct voltage across these terminals activates the relay.
- o Load (contact) side: This high-voltage side switches the connected device. Terminals are commonly labeled COM (30), NO (87), and NC (87a). The relay contacts carry the load current, while the coil remains electrically isolated from the load .

Step-by-Step Connection

- o Identify terminals: Check the relay datasheet or markings to locate coil and contact terminals. For a 4-pin relay, 85/86 are coil pins, 30 is common, and 87 is normally open. A 5-pin relay adds 87a for normally closed operation .
- o Connect the coil to the power supply:
 - o Connect the positive control voltage to A1 (or 86) and the negative/ground to A2 (or 85).
 - o If using a DC relay, place a flyback diode across the coil (cathode to positive) to suppress voltage spikes when the coil de-energizes .
- o Connect the load side:
 - o Connect the power supply line to COM (30).
 - o Connect the device to NO (87) for normally-off operation or NC (87a) for fail-safe normally-on operation.
 - o Complete the circuit by connecting the device's return line to the power supply neutral or negative terminal .
- o Grounding and protection:
 - o Ensure proper grounding between the control device, power supply, and load to reduce interference and prevent damage .
 - o Use fuses or circuit breakers rated for the load current to protect the relay and connected equipment .
- o Testing:
 - o Before powering the full circuit, verify connections with a multimeter.
 - o Energize the coil and confirm that the relay switches the load correctly without overheating or sparking .

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Tips for Safe Operation

- o Always match the coil voltage to the control supply (e.g., 12V DC relay with 12V supply).
- o Ensure the contact current rating exceeds the load's maximum current.
- o For inductive loads like motors, choose a relay rated 20-25% above the full-load current to handle startup surges .
- o Double-check polarity and terminal markings to prevent damage to the relay or control circuitry . By following these steps, a relay protection device can be safely connected to a power supply, providing reliable isolation and control for high-power loads.

In this article, I will show you how to wire a relay, don't worry; it's not as hard as it may seem.

Power system stability means also ability to maintain acceptable voltage. Stability may be lost due to too long clearing time of faults (

Prepared by Working Group I5 Working Group Assignment presentation of protection and control relaying.
The report

The SEL-700G is the right solution for utility and industrial generator protection, with autosynchronizer, flexible I/O, and advanced

Learn everything you need to know about protective relays, the essential devices used to

Relays are generally available in different types like reed, protective, thermal, electromagnetism, reed, Buchholz relay,

Introduction to relay protection Protection is the branch of electric power engineering

This article is a comprehensive technical guide to relay wiring diagrams, covering 4-pin and 5-pin configurations,

Typical Relay and Circuit Breaker Connections Protective relays using electrical quantities are connected to the power

We'll walk through how relays work, why they're useful for long cable runs and high

Learn how to wire a relay with confidence. This guide covers relay basics, wiring diagrams for common types,

How to connect a relay for power protection

safety

In this post I have explained comprehensively regarding how relay works in electronic circuits, how to identify its

Traditionally, protective relays were electromechanical devices utilizing induction disk, coils, contacts, and solenoid elements to

Connect the relay-end of the wire to the terminal with a blade connector and wire crimper,

Protect critical components in your power system with a wide range of SEL protective relays covering applications and use cases

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