

Relay protection device has no voltage



Overview

Protective relays and devices have been developed over 100 years ago to provide “last line” of defense for the electrical systems.

Key Takeaways

A relay protection device showing no voltage may be caused by coil issues, insufficient supply voltage, phase loss, or incorrect wiring, and requires systematic troubleshooting to restore operation. Common Causes

1. Coil Issues: The relay coil may be disconnected or damaged due to overvoltage, mechanical stress, or previous cleaning processes. A disconnected or burned-out coil will prevent the relay from energizing even if voltage is applied .
2. Insufficient Coil Voltage: Relays require a minimum "must-operate" voltage to function. If the applied voltage is below this threshold, the relay will not actuate. Measuring the voltage at the coil terminals and comparing it to the relay datasheet is essential .
3. Incorrect Polarity: For relays with diodes or DC coils, reversing the polarity of the applied voltage can prevent operation. Ensure the positive and negative connections match the relay specifications .
4. Phase Loss or Voltage Imbalance: In three-phase systems, a phase failure relay or voltage monitoring relay may detect a missing phase or incorrect sequence. If one phase voltage is zero or the sequence is wrong, the relay will de-energize to protect motors or equipment .
5. Protective Relay Dependencies: Protective relays rely on inputs from current transformers (CTs) and potential transformers (PTs). Faulty CT/PT connections, incorrect pickup settings, or a broken trip circuit can prevent the relay from operating .

Troubleshooting Steps

- **Check Supply Voltage:** Measure the voltage at the relay coil or input terminals to ensure it meets the required operating range.
- **Inspect Coil and Connections:** Look for signs of damage, loose connections, or polarity issues. Replace the coil if necessary.
- **Verify Phase Conditions:** For three-phase relays, confirm all phases are present, balanced, and in correct sequence.
- **Test Relay Contacts:** Ensure that the relay contacts are not stuck or damaged, which could prevent proper operation.
- **Check Trip Circuit and Coordination:** Confirm that the relay is correctly integrated with the breaker and upstream/downstream protection devices .

Preventive Measures

- Use surge suppressors or rectifiers to protect relay coils from voltage transients .
- Regularly inspect and test relays to ensure proper operation.
- Adjust ON-delay and OFF-delay timers in phase failure relays to avoid nuisance tripping while still protecting equipment . By systematically checking voltage supply, coil integrity, phase conditions, and relay settings, most "no voltage" issues in protective relays can be identified and corrected.

Article Content

No Volt Release (NVR) and No Voltage Relay Working Principle

Protective relays are power system protection devices that monitor current, voltage, e series protective relay troubleshooting guide

Use the online E-Series protective relays troubleshooting guide to diagnosis and correct issues with Eaton's motor relay, generator

Protective Relay Basics

The objective of this presentation is to convey a basic understanding of protective relays to an audience of engineers already familiar

Power System Protective Relays: Principles & Practices

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Voltage Protection Relay: Working Principle and Functions

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Protective Relay Testing and Maintenance Overview

Solid-state relays use power semiconductor devices such as thyristors and transistors to switch currents up to around

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Where it is desired to have more time delay before element operates for purpose of coordinating with other protective relays or

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Protective relays are arguably the least understood component of medium voltage (MV) circuit protection. In fact,

No Volt Release (NVR) and No Voltage Relay Working

No voltage relay- Image courtesy – Alstom The construction part is very simple, a simple under voltage

Protection Relay Testing and Commissioning R

The protection relay must cleanly power up when the voltage is applied and not maloperate. There is no internationally accepted

Under Voltage Protection Working Principle 27

In this article, we will discuss the working principle and configuration of under voltage (ANSI 27) protection relay.

Basic protection relay knowledge

On the other hand, unselective protection operation in the extra high voltage network – i.e. at the national grid level- may endanger

Introduction to Protective Relaying | Electric Power Measurement and ...

Introduction to Protective Relaying What are Protective Relays, or Protection Relays? Protective relays are used in industrial power

Protective Relays | Electromechanical Relays | Electronics Textbook

Protective relays can monitor large AC currents by means of current transformers (CT's), which encircle the current-carrying

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Operation, maintenance, and field test procedures for protective relays

The protection circuits include all low-voltage devices and wiring connected to: instrument transformer secondaries,

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COMPANO 100 is a battery powered relay test set. It can be used for primary and secondary injection, for instrument transformers

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Insufficient coil voltage: The relay will not operate if the voltage is lower than the must-operate voltage. Incorrect

How to Troubleshoot Mechanical Relays

What Causes Relay Failure? Most times, the culprit of relay damage is a spike in voltage to either the coil or the

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Under Voltage wave form Reason Under voltage protection: i.e The output from the generator's LAVT potential

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Voltage Protection Relays: Functions, Types & Applications

With the rise of electrical appliances, the safety of electrical systems has become paramount, both in civil and factory

Relay module has no output power??

The power supply is 5v like the relays and is 2.5a which the solid state relay is 5v 2a. I have checked with voltmeter

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A drop in voltage forces these devices to draw higher currents, which leads to overheating and premature failure.

No Volt Release (NVR) and No Voltage Relay Working Principle

No voltage relay- Image courtesy – Alstom The construction part is very simple, a simple under voltage relay can be configured as a

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