

Disadvantages of low sensitivity in relay protection



Article Overview

When relay protection sensitivity is too low, the system may fail to detect faults, leading to delayed or missed tripping, reduced selectivity, and potential widespread outages.

Fault Detection Failure

Low sensitivity in a relay means it may not respond to small or high-resistance faults, such as single-phase-to-ground faults or faults with low fault currents. This can result in undetected faults, allowing them to persist and potentially escalate into more severe system disturbances or equipment damage . In medium-voltage networks, this may cause localized outages, but in extra-high-voltage systems, it can threaten overall grid stability and even trigger cascading failures .

Reduced Selectivity

Relay selectivity ensures that only the circuit closest to the fault trips, minimizing the impact on the rest of the network. If sensitivity is too low, the relay may fail to trip for faults at the end of a feeder, leaving the fault unisolated and potentially causing overloading or damage to upstream equipment . This compromises the protection scheme's ability to isolate only the affected section.

Impact on Protection Coordination...

Article Content

Jan 04, 2026

Considerations for Using High-Impedance or Low-Impedance Relays

B. Supplemental Protection Functions High-impedance bus differential relays offer no opportunity for supplemental

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Module 1 : Fundamentals of Power System Protection

4.1 Dependability A relay is said to be dependable if it trips only when it is expected to trip. This happens either when the fault is in

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Sensitivity of a Relay

Sensitivity of a Relay The relay in a protection system should be sensitive enough to operate when a fault occurs. A sensitive relay

Oct 22, 2025

PMU-based relays_v2.dvi

Type of medias and network topologies in communications provide different opportunities to advance the speed, security,

Apr 14, 2026

Advantages and disadvantages of microprocessor relay protection

Advantages and disadvantages of microprocessor-based devices for relay protection and automation are given in comparison with

Aug 13, 2025

What is a Protective Relay? Principle, Advantages, Applications

A protective relay is an electrical component that is designed to trip a circuit breaker when a fault is encountered or

Dec 09, 2025

What Is the Disadvantage of Relay? | Key Issues Explained

The Issue of Switching Delays in Relay Operations One significant disadvantage of relays is the inherent switching delay. When a

May 17, 2026

Protective Relay : Working, Types, Circuit & Its Applications

Protective Relay : Working, Types, Circuit & Its Applications An electrically operated switch like a relay plays a key role in controlling

Jan 15, 2026

Considerations for Using High-Impedance or Low-Impedance Relays

Low-impedance relays can share CTs and offer additional protection functions, while high-impedance relays are highly sensitive. CT

Apr 24, 2026

Protective Relaying Principles and Applications

Protective Relaying Principles and Applications The article provides an overview of protective relaying principles and their

Nov 19, 2025

The Adaptability and Challenges of Protection Relays in Distributed ...

In addition, the reliability of the scheme remained above 95% during 30 days of simulated operation. Experimental

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SEL-700G Generator Protection Relay | Schweitzer Engineering

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

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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

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UNIT 1 PROTECTIVE RELAYS

PROTECTIVE RELAYS PROTECTIVE RELAYING Requirement of Protective Relaying Zones of protection, primary and backup

Jan 26, 2026

Maximizing Line Protection Reliability, Speed, and Sensitivity

Abstract—This paper describes several commonly applied line protection schemes, including distance schemes, directional

Nov 27, 2025

Basic protection relay knowledge

While this is bad, It's not a complete disaster. On the other hand, unselective protection operation in the extra high voltage network -

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Considerations for Using High-Impedance or Low-Impedance Relays

Considerations for Using High-Impedance or Low-Impedance Relays for Bus
Differential Protection Considerations for

May 20, 2026

(PDF) REVIEW OF MICROPROCESSOR BASED PROTECTIVE RELAYS

This paper proposes a protection strategy based on microprocessor-based relays for low-voltage microgrids. Further,

Jul 04, 2026

relays importance advantage disadvantage and solution | enProducts

Proper maintenance and handling can help extend its life. Relays play an essential role in electrical systems, offering

Sep 20, 2025

Protective Relays and Monitoring Relays Selection Guide: Types ...

Both protective relays and monitoring relays may be sensitive to voltages, power or phase, current, or frequency. Protective relays

Oct 31, 2025

Societal and technology trend report

For step-up transformers in new energy collector stations - where the low-voltage side connects to new energy and the high-voltage

Jan 05, 2026

ASSESSING THE SENSITIVITY OF RELAY PROTECTION

Based on simple examples of the generator-transformer unit protection from symmetrical short circuits, it was shown that the

Nov 11, 2025

Protective Relay Basics

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

Jul 05, 2026

The Role of Protection Relays in Power Systems and an

Protective relays are critical in power systems because they serve as decision-making devices that ensure the safe

Jun 27, 2026

Power System Protective Relays: Principles & Practices

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

Nov 07, 2025

Assessing the Sensitivity of Relay Protection

An assessment of sensitivity of the measuring elements of relay protection was performed. Based on simple examples

Apr 30, 2026

Relay protection sensitivity integrated optimal placement and capacity ...

The relay protection sensitivity can be decreased to below the minimum values, failing to meet the requirements for

Jan 13, 2026

Assessing the Sensitivity of Relay Protection

This article explores the issues of enhanced sensitivity of multi-parameter relay protection using long-range redundancy

Nov 16, 2025

Understanding Protective Relays in Power Systems

Protective relays are critical components in power systems, providing essential protection for various elements such

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