# Relay protection sensitivity is too high


## Overview

Choosing this value too high reduces protection. Determine the maximum load imbalance current. Check transformer magnetizing current and inrush characteristics. One of the main requirements to relay protection is the sensitivity requirement, which implies consistent tripping during the short circuit (s c) events in the protected zone. The sensitivity should be sufficient to ensure reliable protec-tion during s c at the end of its specified zone under. Selectivity is a mandatory requirement for all protection, but the importance of it depends on the application. Defining Performance The performance of a relay element or relaying scheme is described using the terms selectivity, speed, and sensitivity. Selectivity is a measure of how well a relay element can differentiate between an in-zone and an out-of-zone. Proper Earth Fault Relay Sensitivity Settings play a crucial role in ensuring reliable protection for electrical systems.

## Article Content

Jun 13, 2026

What is Protection Relay?

A protection relay is a crucial component of electrical systems that safeguard infrastructure, employees, and equipment from electric problems and

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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 sensitivity factor is not a sufficiently objective measure of sensitivity of the relay

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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 – i.e. at the national grid level- may endanger the stability of the whole

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

Dec 19, 2025

High Impedance Restricted Earth Fault Protection

This paper summarizes the operating principle of a high impedance protection unit, its relay sensitivity, related CT requirements, importance of a

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New approach to improve sensitivity of differential and

Hence, the primary and secondary currents are high enough to be detected by the differential protection and consequently high sensitive relay is not

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Comprehensive Guide to Overload Relays: Motor

This guide provides a detailed overview of overload relays, including their role in protecting motors from overheating, common causes of motor overload, key

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On resistance-grounded power transformers, phase differential protection sensitivity for ground faults near the neutral is decreased. The use of ground differential protection will be explored and the

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Motor protection: Three common mistakes and how to

Learn about three common mistakes in motor protection and the best practices you can follow for safer and more reliable operations.

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Impact of CT Errors on Protective Relays – Case Studies and Analysis Rich Hunt, Lubo Sevov, Ilia Voloh - GE Multilin Current transformers (CTs) are the basic interconnection between the power

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Assessing the Sensitivity of Relay Protection

An assessment of sensitivity of the measuring elements of relay protection was performed. Based on simple examples of the generator-transformer unit protection from symmetrical short

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Basic setting of current differential line protection | EEP

Higher sensitivity will increase dependability, but decrease security. Too high sensitivity may cause false trips due to ct errors at external faults with

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Power System Protective Relays: Principles & Practices

Protective relays and devices have been developed over 100 years ago to provide “lastline”of defense for the electrical systems. They are intended to quickly identify a fault and isolate it so the balance of

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Transmission Line Setting Calculations – Beyond the Cookbook

If the CTR is set too high in an attempt to avoid overloading or saturation, then it can have a negative impact on the overall sensitivity of the relay. The rule of sensitive but not too sensitive applies here.

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Power System Protective Relays: Principles & Practices

As the protected components of the electrical systems have changed in size, configuration and their critical roles in the power system supply, some protection aspects need to be revisited (i.e. the use of

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Relay Failure Modes

Relay Failure Modes Relays are crucial components in electric power systems that provide protection against abnormal operating conditions, such as faults. However, like any electrical

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(PDF) Relay protection sensitivity integrated optimal placement and ...

The relay protection sensitivity evaluation was integrated into the proposed model and the particle swarm optimization (PSO) algorithm was developed to solve the nonlinear issue.

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Protective relay

Measuring elements of static relays have been successfully and economically built up from diodes, zener diodes, avalanche diodes, unijunction transistors, p-n-p

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Relay protection sensitivity integrated optimal placement and capacity ...

To address this challenge, a new optimization model integrated with the relay protection sensitivity to maximize the inverter interfaced distributed generator (IIDG) penetration level while minimizing IIDG

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Relay protection sensitivity integrated optimal placement and capacity ...

The relay protection sensitivity is one of the determined factors in the power system, however, it is often overlooked in current distribution network (DN) planning. The relay protection

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Sensitivity improvement of time overcurrent relays

The adjustment of an overcurrent relay is mostly compromised because the minimum values of fault current and relay adjustment are comparable, making correct fault detection difficult. A

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Earth Fault Relay Sensitivity Setting: 5 Proven Tips For

Optimize your system protection with the right earth fault relay sensitivity setting. Learn how proper adjustments improve reliability, reduce fault

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Sensitivity and Selectivity of Time Overcurrent Relay Protection in ...

The overcurrent relay protection is the most commonly used against line to line faults in medium voltage power lines. The main requirements for the relay protection are selectivity, sensitivity, quick operation

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Understanding Protective Relays in Electrical Power Systems

Explore the world of protective relays and their vital role in ensuring the safety and reliability of electrical power systems.

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Earth Fault Relay Sensitivity Setting: 5 Proven Tips For

Earth Fault Relay Sensitivity Setting Understanding this relationship helps you select the right starting point and avoid miscoordination. Choose the

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What is a Protective Relay? Principle, Advantages,

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

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Distribution Automation Handbook

Time-graded protection is implemented using overcurrent relays with either definite time characteristic or inverse time characteristic. The operating time of definite time relays does not depend on the

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Selectivity and sensitivity of overcurrent relay protections

The paper discusses the conditions for setting the overcurrent protection and how they determine the sensitivity and selectivity of these protection in medium voltage power grids.

Mar 20, 2026

Maximizing Line Protection Reliability, Speed, and Sensitivity

Originally presented at the 42nd Annual Western Protective Relay Conference, October 2015, under the title “Maximizing Line Protection Reliability, Speed, and Security”

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