

The Essence of Selectivity in Relay Protection



Article Overview

Selectivity in relay protection is the ability of protective relays to isolate only the faulty section of a power system while leaving the rest of the system operational.

Definition and Importance

Selectivity, also known as discrimination, is a key characteristic of protective relays in electrical power systems. It ensures that only the relay closest to the fault operates, isolating the affected section without disturbing other parts of the network, thereby maintaining system stability and continuity of power supply. This is particularly critical in high-voltage networks, where unselective operation can lead to widespread outages or even system-wide blackouts.

Working Principle

Selectivity is achieved through proper coordination of protective relays. Each relay is assigned to a specific zone of protection and is set to respond only to faults within that zone. When a fault occurs:

- The primary relay closest to the fault operates first to isolate the faulted section.
- If the fault persists, backup relays in adjacent zones operate with a time delay, ensuring minimal disruption. This coordination relies on time-current characteristics and relay settings that prevent unnecessary tripping of upstream or downstream devices

Article Content

Aug 19, 2025

Lecture 4 | PDF

This document discusses the desirable attributes of power system protection, including dependability, security, sensitivity, selectivity,

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Methodology to assess performance indexes for sensitivity, selectivity ...

For each fault, the trip sequence of each relay pair is identified and classified according to 15 possible outcomes. The

Jan 15, 2026

Martin J. Slabbert MEng (Electrical), NDip (Digital Tech.), PrEng ...

Martin J. Slabbert MEng (Electrical), NDip (Digital Tech.), PrEng. SMSAIEE Prioritising the Protection Philosophy Elements of

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Basic Theories of Power System Relay Protection

Relay protection with good performance should meet the requirements of reliability, selectivity, speed and sensitivity.

Jul 29, 2025

Module 1 : Fundamentals of Power System Protection

Recall that directional overcurrent relay was introduced to improve selectivity of overcurrent relay. This jurisdiction into primary

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Techniques to get selectivity in low and medium voltage

Selectivity (discrimination) is achieved by automatic protective devices when a fault is cleared by the protection device installed

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What is selectivity in the context of protective relays?

Conclusion: Understanding the concept of selectivity in protective relays is essential for ensuring the safe and reliable

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Practical Guide to Selective Protection Coordination

What is Selective Coordination? Selective coordination refers to the strategic arrangement and setting of protective devices (such as

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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

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Maximizing Line Protection Reliability, Speed, and Sensitivity

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

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Selectivity in Power System Protection | PDF | Relay | Electric Power

Selectivity Criteria in Protection Schemes: In power system protection, selectivity is the ability of a protection scheme to isolate only

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MV/HV Electrical Network Protection | Proper Selectivity

MV/HV Electrical Network Protection With Kind Permission of: Edvard Csanyi (Editor-In-Chief & Electrical Engineer at

Oct 06, 2025

Lecture 5

Selectivity Only the effected parts of the power system shall be disconnected. Is achieved by two main methods Time

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Strategies for Selectivity in Relay Protection Systems

Strategies for selectivity in relay protection systems are approaches used to ensure that only the faulty section of a power system is

Sep 27, 2025

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

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Basic protection relay knowledge

Selectivity Selectivity is a mandatory requirement for all protection, but the importance of it depends on the application. For example,

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Lecture 4 | PDF

Sensitivity is the ability to detect small faults, and selectivity is the ability to discriminate faults within the relay's zone of protection.

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A review on adaptive power system protection schemes for future

Protection devices such as fuses and protective relays are widely used to identify and isolate faulty areas from

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How Does Selectivity Work In Relay Protection Systems ...

Ever wondered how power systems prevent widespread outages when faults occur? In this video, we explain the

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Power System Selectivity:

Selectivity can be achieved with devices that are "inherently selective." That is, they operate only on faults within their "zone of

Nov 24, 2025

Power System Selectivity:

Selectivity and Overcurrent Relays Protective relay curves cannot be used in the same way as low voltage circuit breaker curves or

Dec 25, 2025

(PDF) ANALYSIS OF COORDINATION AND SELECTIVITY BETWEEN PROTECTION ...

This study aims to analyze the coordination and selectivity of the protection in a low voltage industrial electrical

Dec 06, 2025

Functional characteristics of Protection Relays

Selectivity Selectivity refers to the ability of the relay to discriminate between faults. This is critical as only the smallest possible

Sep 12, 2025

Maximizing line protection reliability, speed, and sensitivity

Protection relay is designed based on the basis of selectivity, reliability, speed and sensitivity . One of protection

Dec 14, 2025

Practical handbook for relay protection engineers | EEP

Relay protection circuitry This handbook covers the code of practice in protection circuitry including standard lead and

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ANALYSIS OF COORDINATION AND SELECTIVITY BETWEEN PROTECTION

Keywords: Coordination, Selectivity, Protection, Short Circuit. industrial electrical installation, so that the protection devices isolate

Jun 16, 2026

Selectivity

Selectivity exists in a low-voltage network if only the protective device connected directly upstream of the fault location

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://khanimamboguesthouse.co.za>

Email: sales@khanimamboguesthouse.co.za

Phone: +27 64 852 1973

Address: Unit 7, Greenway Business Park, 8 Innovation Drive, Centurion, 0157, South Africa

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