

Examples illustrating the selectivity of relay protection



Article Overview

Relay selectivity ensures that only the faulty section of a network is disconnected, while upstream relays act as backups, minimizing service interruptions.

Example 1: Time-Graded Protection in a Radial Feeder

In a radial distribution network, relays are arranged so that the relay closest to the fault operates first. For instance, if a fault occurs at the far end of Feeder 1, the downstream relay (Relay 1) trips first, isolating only the affected feeder. The upstream relay (Relay 2) serves as a backup and will operate only if Relay 1 fails to clear the fault. This ensures selective tripping and limits the outage to the smallest area possible, allowing rapid restoration of service to unaffected feeders (ABB Handbook) .

Example 2: Phase and Ground Fault Selectivity

In a 13.8 kV or 4.16 kV network, selectivity is achieved by setting relays based on maximum and minimum short-circuit currents. For a phase-to-ground fault, the downstream relay is set to operate faster than the upstream relay. Coordination curves are used to visualize the operating times of each relay relative to fault current magnitude. For example, if the maximum phase-to-ground fault current is 400 A, the downstream relay may trip in 0.2 seconds, while the upstream relay trips in 0.5 seconds, ensuring only the faulty segment is disconnected (EEP)

Article Content

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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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Overcurrent Protection – Selectivity Analysis

Overcurrent Protection – Selectivity Analysis Overcurrent Protection module is used for the co-ordination of various protection

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Philosophy of a good relay protection settings for machines and ...

Relay protection objectives The objectives of the protection system are: to limit damage to people and to the plant,

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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

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Module 1 : Fundamentals of Power System Protection

Like sensitivity, selectivity also implies an ability to discriminate. A relay should not confuse some peculiarities of an apparatus with a

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Protective Relays: Types, Working Principle & Uses

Learn how protective relays detect faults, trip breakers, coordinate protection zones, and

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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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Practical Guide to Selective Protection Coordination

Learn how to set priorities and adjust protective devices for selective coordination to isolate faults and minimise outages in electrical

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Relay Coordination Study: Selectivity Calculations | EEP

The scope of study involves calculating the settings for protective relays to achieve selectivity during faults occurring in

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IEC Standard For Relay Coordination : Electrical Engineering Hub

Relay coordination is one of the most critical aspects of electrical power system protection. The IEC standard for relay

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Relay Coordination and Selective Protection

Good and reliable selectivity of the protection is essential in order to limit the supply interruption to the smallest area

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Overcurrent Protection – Selectivity Analysis

The main objective of relay co-ordination is to achieve the desired selectivity without losing the sensitivity and quick fault clearing

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Selectivity and sensitivity of overcurrent relay protections

The issues related to the fulfillment of the requirements for selectivity and sensitivity of the overcurrent protections are still relevant

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Prioritising the Protection Philosophy Elements of Speed, Selectivity ...

The protection philosophy is defined by sensitivity, selectivity, speed, dependability and security. This philosophy is

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Power System Selectivity

Power System Selectivity: The Basics Of Protective Coordination By Gary H. Fox, PE, GE Specification Engineer The intent of this

Oct 26, 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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Protective Relay Basics

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

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Protective Relaying Principles and Applications

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

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Basics of Protective Relaying and Design Principles

The sample exercises for this chapter include: Perform power system simulations of selected faults and observe how a given

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How Does Selectivity Work In Relay Protection Systems ...

Ever wondered how power systems prevent widespread outages when faults occur? In

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Relay Protection: Scheme Design And Coordination

For example, feeder protection in a radial system prioritizes selectivity and coordination, while protection in meshed or looped

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Distribution Automation Handbook

The measuring principle ensures that the relay operates exclusively on faults inside the area of protection, which means that the

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Power System Selectivity:

Examples of inherently selective systems are current differential relays (typically applied on busses, motors, generators,

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Power System Selectivity: The Basics Of Protective Coordination

The Definition of Selectivity A power system where these competing goals are in balance has “selectivity” as a

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Relay Protection in HV/MV Substations: Calculations, Settings ...

Effective relay protection in HV/MV substations requires a thorough approach encompassing calculations, precise

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IEC Standard For Relay Coordination : Electrical Engineering Hub

In large industrial and utility networks, uncoordinated relays can cause unnecessary outages, equipment damage, and

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doi: 10.1007/978-3-319-20919-7_3

Perform power system simulations of selected faults and observe how a given protection principle (overcurrent, impedance, and

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(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

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Basic protection relay knowledge

A fast and selective arc fault mitigation for air-insulated LV & MV switchgear and Relion protection and control relays and sensor

Contact Us

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