Relay Protection Line Selection

Article Overview

Relay protection line selection refers to the process of choosing and coordinating protective relays for a power line to ensure faults are detected and isolated quickly, selectively, and reliably.

Definition and Purpose

Relay protection line selection is the engineering process of selecting appropriate protective relays and schemes for a transmission or distribution line. Its main goal is to detect faults such as short circuits, ground faults, or phase faults and isolate only the affected section, minimizing disruption to the rest of the power system ( ). Proper selection ensures that the closest breaker to the fault trips first, while backup relays operate only if the primary relay fails, maintaining system stability and safety ( ).

Key Considerations in Line Relay Selection

- Selectivity: Relays must operate only for faults within their designated zone and remain secure for external faults or normal load conditions. This prevents unnecessary outages and ensures that only the faulted section is isolated ( ).

- Speed of Operation: Faster relay operation reduces equipment stress, limits thermal damage, and minimizes voltage dips and post-fault load peaks. The choice of relay type and settings directly affects operating speed ( ).

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Article Content

Jan 16, 2026

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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Relay Selection Guide Overview

This document provides an introduction to power distribution system protection and relay selection. It discusses basic concepts like

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Basics of Protective Relaying and Design Principles

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

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Protection relays

Protection relays Numerical relays are based on the use of microprocessors. The first numerical relays

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Transmission Line Protection Principles

Parallel lines also impact relaying, as mutual coupling influences the ground current measured by protective relays.

Aug 31, 2025

R e l a y S e l e c t i o n G u i d e

In spite of the best efforts of system designers and protection specialists, and despite the fact that relays have a historical record of

Apr 15, 2026

Selector Guides

Smart Grid Product Solutions Overview - From power generation to the power consumer GE optimizes end-to-end grid efficiency,

Feb 04, 2026

Practical handbook for relay protection engineers | EEP

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

Jan 31, 2026

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

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

Feb 27, 2026

C37.113-2025

The purpose of this guide is to provide protection engineers with information that helps them to apply relays and other devices to

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Relays-Online

ABB Relays-Online makes finding, selecting, ordering, and tracking of your next digital substation product order quick and easy. The

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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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ABB Relays-Online

On ABB Relays-Online you can access all the digital tools and services for ABB''s Digital Substation Products, such as protection

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IEEE Guide for Protective Relay Applications to Transmission Lines

The impact of different electrical parameters and system performance considerations on the selection of relays and protection

Nov 08, 2025

IEEE Guide for Protective Relay Applications to Transmission Lines

The purpose of this guide is to provide a reference for the selection of relay schemes and to assist less experienced protective

Aug 20, 2025

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

Apr 18, 2026

Basic setting of current differential line protection | EEP

This paper reviews the basic setting criteria for current differential line protection, and the charge comparison relay in

Mar 08, 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 06, 2025

C37.113-2015

Information on the concepts of protection of ac transmission lines is presented in this guide. Applications of the

Oct 20, 2025

Line Distance Protection Relay: Complete Guide for Transmission

Developed specifically for utility electrical engineers, EPC general contractors, substation design firms and industrial

Sep 04, 2025

Protective Relaying Principles and Applications

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

Nov 25, 2025

Protection relay selection table

Protection relay selection table Please note before using selection table! number = Number of stages, shots, X =

Mar 11, 2026

SEL-751 Feeder Protection Relay | Schweitzer Engineering Laboratories

The SEL-751 Feeder Protection Relay is ideal for directional overcurrent, fault location, arc-flash detection, and high-impedance fault

Sep 20, 2025

Protective Relays

Protect critical components in your power system with a wide range of SEL protective relays covering applications and use cases

May 02, 2026

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

Protective relays and monitoring relays detect or monitor for abnormal power system conditions. Protective relays detect defective

Nov 24, 2025

Fundamental overcurrent, distance and differential protection ...

Essential protection principles The aim of this technical article is to cover the most important principles of four

Sep 04, 2025

SEL-421 Protection, Automation, and Control System

SV Relay— The SEL-421-7 relay offers complete line protection and can also receive SV data from devices such as the SEL-421-7

Dec 21, 2025

Relay Settings Calculations

During external faults, the relay changes to high-security mode and switches from Slope 1 to Slope 2 to avoid relay mal-operation

Jan 21, 2026

Distribution Automation Handbook

Relay Coordination and Selective Protection 8.2.1 Introduction The selected protection principle affects the operating speed of the

Sep 29, 2025

Line differential protection and control RED615 IEC

RED615 is a phase-segregated, two-end, line differential protection and control IED harmonized for overhead line and cable feeders.

Oct 17, 2025

SIPROTEC Protection Relays | Siemens

Siemens'' universal protection relays portfolio includes products such as SIPROTEC 7SX800 and 7SX85 to provide flexibility and cost

Jan 14, 2026

Selector Guides

GE''s unique tool for identifying the best solutions for protection & control across the entire power system

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Line Protection

With feature-rich SEL relays, you can apply protection, fault-locating, and monitoring solutions with a single piece of equipment. This

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Relay Selection Guide

Minimum protection for a small machine with low resistance grounding This is where system protection, and protective relays

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Feeder protection and control REF615 IEC

REF615 is a dedicated feeder protection and control relay for protection, control, measurement and supervision of overhead lines

Contact Us

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