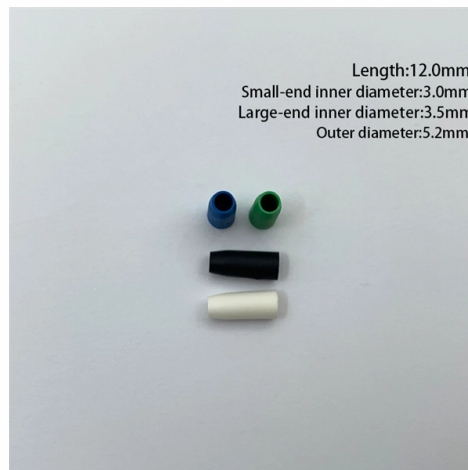


Selection parameters for relay protection devices



AI Overview

Relay protection devices are configured by calculating and setting key parameters such as current pickup, time delays, and coordination factors to ensure selective and reliable operation.

Key Parameters in Relay Protection:

- Plug Setting Multiplier (PSM):** Defines how many times the actual current exceeds the relay's pickup current. It is essential for inverse definite minimum time (IDMT) relays to determine operating time and must comply with IEC 60255-151 standards for overcurrent relays.
- Time Setting Multiplier (TSM):** Adjusts the relay operating time according to the system's coordination requirements. It ensures that relays operate in the correct sequence to isolate faults without affecting healthy sections.
- Overload Setting (OL):** Protects equipment from thermal overload by setting the maximum permissible current over a defined period.
- Earth Leakage / Earth Fault Setting (EL):** Determines the current threshold for detecting ground faults, ensuring sensitive and selective operation for earth fault conditions.
- Multiplying Factor (MF):** Used for scaling or metering purposes, particularly when instrument transformers are involved, to ensure accurate relay response.

Steps to Provide Parameters:

- System Analysis:** Calculate maximum load currents, minimum fault currents, and expected voltage levels. Perform fault level calculations for different fault types (single line-to-ground, line-to-line, three-phase) to determine relay sensitivity.
- Select Relay Type:** Choose the appropriate relay (overcurrent, differential, distance, directional, or special protection) based on the equipment and protection scheme.
- Determine Settings:** Using the calculated currents and fault levels, set PSM, TSM, EL, OL, and MF values. For distance or differential relays, calculate impedance or differential current settings to define zone reach and sensitivity.
- Coordination:** Ensure proper coordination with upstream and downstream...

Article Content

Relay Protection Settings (PSM, TSM, EL, OL, MF)

Protection relays employ a wide range of configurable parameters to identify defects & trip the breaker in a controlled & selected manner. Understanding each setting facilitates proper relay

Types of Protective Relays

This article covers various types of protective relays, such as overcurrent, directional, and differential relays, highlighting their operating characteristics and applications in electrical systems.

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

Protective relays often have circuitry in them for the protecting function, as well as a relay to do the switching. Most are not simple, electromechanical devices like a circuit breaker but instead contain a

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

Effective relay protection depends on accurate calculations, optimal settings, careful coordination, appropriate selection of relays, and thorough validation.

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 systems. They are intended to quickly identify a fault and isolate it so the

Relay Settings Calculations

Protection selectivity is partly considered in this report, and could be also reevaluated. Names of parameters in this calculation may differ from those in appropriate device. This document is

Practical handbook for relay protection engineers | EEP

When the protection is implemented using a current relay, the current value at which the relay should operate must be determined first. By means of the stabilizing voltage and the current setting, the

SELECTION GUIDE

SELECTION GUIDE TE Connectivity (TE) is your components provider for relays that help increase reliability and enhance productivity in your applications. We offer the broadest range of relays and

Protection relay selection table

Protection relay selection table Please note before using selection table! number = Number of stages, shots, X = Function supported inputs or outputs O = Function available as option

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 schemes is discussed. The purpose of this guide is to provide a reference for

Basic protection relay knowledge

Selectivity Selectivity is a mandatory requirement for all protection, but the importance of it depends on the application. For example, unselective protection operation during a medium voltage network fault

Practical handbook for relay protection engineers | EEP

Relay protection circuitry This handbook covers the code of practice in protection circuitry including standard lead and device numbers, mode of connections at terminal strips, colour codes in

Different Types of Protective Relays | 360training

Protective relays play a vital role in safeguarding electrical systems, ensuring safety, and preventing costly equipment damage. These devices are essential components in various

Types of Electrical Protection Relays or Protective Relays

□□ Key learnings: Protective Relay Definition: A protective relay is an automatic device that senses abnormal conditions in electrical circuits and triggers actions to isolate faults. Types of

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 operation of power grid. They play a key role in power system protection.

Choosing the Perfect Relays: A Comprehensive Guide to Meeting

Choose the perfect relay for your needs with our comprehensive guide. We cover all aspects of relay selection, from technical specifications to applications.

SEL-351 Protection System | Schweitzer Engineering Laboratories

The SEL-351 Relay has built-in Ethernet and IEEE C37.118 synchrophasors, and is ideal for directional overcurrent applications. Optional Mirrored Bits® communications and power quality monitoring add

PARAMETERIZATION OF PROTECTION RELAYS IN POWER

The teaching text describes complex procedures for parameterization of overcurrent, differential, and distance protection relays from the company SEL, a theoretical basis for protection relays,

Relay Selection Guide

Minimum protection for a small machine with low resistance grounding This is where system protection, and protective relays become important. If component failure is inevitable, then it is necessary to

Protection Basics

Protection System Elements Protective relays Circuit breakers CTs and VTs (instrument transformers) Communications channels

Section2_EP3

The practical sessions covering the calculation of fault currents, selection of appropriate relays and relay coordination as well as hands-on practice in configuring and setting of some of the commonly used

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 relaying engineers in applying protection schemes to transmission lines.

Techniques to get selectivity in low and medium voltage

The different selectivity techniques, also from the operational point of view
Selectivity (discrimination) is achieved by automatic protective devices when a fault is cleared by the protection device installed

Solid-state relay

A solid-state relay (SSR) is an electronic switching device that switches on or off when an external voltage (AC or DC) is applied across its control terminals. They serve the same function as an

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

Rules for protecting a network using overcurrent relays. Requirements for instrumentation (number and locations of instrument transformers) and switching apparatus (number and locations of circuit

PC37.113/D4.13, May 2025

Concepts and applications of AC transmission line protection are presented in this guide. Many important issues, such as coordination of settings, operating times, characteristics of relays, mutual

C37.113-2015

The impact that system parameters and system performance have on the selection of relays and relay schemes is discussed as well. Purpose: The purpose of this guide is to provide

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