What types of relay protection settings are there

Article Overview

Relay protection settings should be based on system parameters, fault current calculations, and relay characteristics, using PSM, TSM, overload, earth leakage, and coordination principles.

Key Parameters for Relay Settings
• Plug Setting Multiplier (PSM) PSM defines how many times the actual current exceeds the relay's pickup current. It is critical for inverse definite minimum time (IDMT) relays and determines the operating time based on fault current. PSM is calculated as: PSM = Fault Current / Pickup Current, where Pickup Current = Current Setting × CT Secondary Rating .
• Time Setting Multiplier (TSM) TSM adjusts the relay's operating time. It is used to coordinate relays in series so that upstream relays operate after downstream relays, ensuring selectivity .
• Overload Setting (OL) This is the thermal overload protection, set to prevent equipment overheating under prolonged high load conditions. It is typically based on rated current and thermal limits of the protected device .
• Earth Leakage / Earth Fault Setting (EL) EL settings detect ground faults. The pickup current is usually a percentage of the rated current, often ranging from 10% to 70% depending on system design .
• Multiplying Factor (MF) MF, or metering/scaling factor, converts measured secondary currents to per-unit or dimensionless values for relay calculations, especially in transformer differential protection ....

Article Content

Nov 17, 2025

Five Steps to Set Up Protective Relays for Power Systems

Learn how to ensure proper set-up of protective relays for power systems by following these steps: identify the protection scheme,

Dec 06, 2025

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 trans

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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

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Types of Protective Relays

This article covers various types of protective relays, such as overcurrent, directional, and differential relays, highlighting their

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UNIT 1 PROTECTIVE RELAYS

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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

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Understanding Protective Relays in Power Systems

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Many protection relays have adjustable settings. 132 ©2012 Littelfuse Protection Relays & Controls The user selects settings (pick

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Learn about protective relays, their working principle, types, and applications in power systems. Discover how relays

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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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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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Section2_EP3

The practical sessions covering the calculation of fault currents, selection of appropriate relays and relay coordination as well as

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Protection Relays The relay is a well known and widely used component. Applications range from classic panel built

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Abstract: Protective relays and devices have been developed over 100 years ago to provide “last line” of defense for the electrical

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Basic Theories of Power System Relay Protection

This chapter first introduces the basic theories of power system relay protection, summarizes the functions and basic requirements of

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Pick Up Current | Current Setting | Plug Setting Multiplier and Time ...

Plug setting multiplier of relay is referred as ratio of fault current in the relay to its pick up current. Suppose we have

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Types of Electrical Protection Relays or Protective Relays

Types of protection relays are mainly based on their characteristic, logic, on actuating parameter and operation

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Protective relay

Electromechanical protective relays operate by either magnetic attraction, or magnetic induction. : 14 Unlike switching type

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