# COETZER OPTICAL SYSTEMS (Pty) Ltd

# Relay protection settings include three parts

## Overview

Protective Relays: Types, Working Principle & UsesA zone of protection is the part of the power system that a relay scheme is intended to Protective Relay.

## Key Takeaways

The three key elements of relay protection settings are Pickup Current, Plug Setting Multiplier (PSM), and Time Setting Multiplier (TSM).1. Pickup Current

Pickup Current is the minimum current at which a relay begins to operate, overcoming the controlling force of the relay coil. It is adjustable through the relay's current setting, often expressed as a percentage of the CT's rated secondary current. Proper selection ensures the relay responds to actual fault conditions while ignoring normal load currents, maintaining system stability and avoiding unnecessary trips ( ).

2. Plug Setting Multiplier (PSM)

PSM indicates how many times the actual fault current exceeds the relay's pickup current. It is a critical factor in determining the operating time of inverse definite minimum time (IDMT) relays. The formula is: PSM = Fault Current / Pickup Current A higher PSM results in faster relay operation, which is essential for rapid fault isolation. PSM settings must comply with IEC 60255-151 standards to ensure correct relay performance and coordination with other protective devices ( ).

3. Time Setting Multiplier (TSM)

TSM scales the base operating time derived from the relay's characteristic curve. It allows engineers to adjust the relay's trip time to coordinate with upstream and downstream devices, preventing unnecessary outages. The actual trip time is calculated by multiplying the base time (from the IDMT curve) by the TSM. Proper TSM selection ensures selective and reliable protection across the power system ( ).

Summary

These three elements—Pickup Current, PSM, and TSM—work together to define when and how quickly a relay operates. Correctly setting these parameters ensures reliability, selectivity, and speed in isolating faults, protecting equipment, and maintaining system stability.

## Article Content

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Protective Relay Basics

High precision settings allow the primary side relay to better protect the full damage curve of the transformer (both three phase and

Protective Relay | Fundamental Requirements of Protective Relay

First part is the primary winding of a current transformer (CT.) which is connected in series with the line to be protected. Second part

Power System Protective Relays: Principles & Practices

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

Protective relay

Electromechanical protective relays at a hydroelectric generating plant. The relays are in round glass cases. The rectangular devices

Practical handbook for relay protection engineers | EEP

This handbook covers the code of practice in protection circuitry including standard lead and device numbers, mode of

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

The protection system is the ensemble of the instrument transformers and the relays with adequate settings. The relay

Protective Relay : Working, Types, Circuit & Its Applications

There are different types of relays available and each type is used based on the requirement. So this article discusses an overview of

POWER SYSTEM PROTECTION

Backup protection relays provide secondary protection in case primary protection relays fail to operate or if there''s a delay in their

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

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Power System Protective Relays: Principles & Practices

This presentation reviews the established principles and the advanced aspects of the selection and application of protective relays in

How to Determine Optimal Settings for Power System Protection Relays

Learn about the best methods and tools to choose the right settings for power system protection relays, and improve your network

Relay Setting in Real Power System

Relay setting plays an important role in maintaining the reliability of a Power System. Read this blog to find out more

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A primary motor protective element of the motor protection relay is the thermal overload element and this is accomplished through

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

Types of Protection Relays and Testing procedures

Regular testing and maintenance of protection relays are essential to verify their proper

Protective Relay : Working, Types, Circuit & Its Applications

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Understanding Protective Relays in Power Systems

Protective relays are critical components in power systems, providing essential protection for various elements such

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Types of Relay in Power System: Types, Applications & Functions of Relay

A relay is an essential component that governs the operation of various electrical systems by allowing the control of high power

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

Distance Protection

DISTANCE PROTECTION Combination of fast fault clearance, with selective operation of protection elements, is the main objective

Relay control and protection guides

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

What is Overload Protection?

Overload relays protect the motor, motor branch circuit, and motor branch circuit components from excessive heat from the overload

Protective Relay | Fundamental Requirements of Protective Relay

The relay circuit connections can be divided into three parts viz. First part is the primary winding of a current transformer (CT.) which

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Technical Explanation for Motor Protective Relay

Protecting the motor itself (burnout protection) Minimizing damage to the load connected to the motor (In this case, you must select a

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Protective Relaying Principles and Applications

The article provides an overview of protective relaying principles and their applications for high-voltage power system components. It

Relays Part 4: The Protective Relay Basic Theory

Protective relays are tested through three methods bench, commissioning, and maintenance testing. Protective relays

Power transformer protection relaying (overcurrent, restricted earth ...

The considerations for a transformer protection vary with the application and importance of the power transformer. It is

Protection Basics

Ground fault protection for these systems is usually provided by residual protection, either calculated by relay or by

Types of Protection Relays and Testing procedures

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