

Setting the operating time of relay protection



AI Overview

Relay protection time is adjusted using the Time Setting Multiplier (TSM) and Plug Setting Multiplier (PSM), which together determine the relay's operating time for different fault currents.

Understanding Key Parameters

Plug Setting Multiplier (PSM): Indicates how many times the actual current exceeds the relay's pickup current. A higher PSM results in faster relay operation because it represents a more severe fault condition.

Time Setting Multiplier (TSM): Scales the base operating time derived from the relay's characteristic curve. Increasing TSM delays the relay operation, while decreasing it speeds up the trip.

Steps to Adjust Relay Time

Determine Relay Pickup Current: Identify the minimum current at which the relay should operate. This is often calculated using the CT ratio and system load.

Set Plug Setting Multiplier (PSM): Adjust the plug position to define the fault current level at which the relay will respond. For example, if the relay should trip at 2.5 times the rated CT current, set $PSM = 2.5$.

Select Time Setting Multiplier (TSM): Use the relay's time-current characteristic curve to determine the base operating time for the chosen PSM. Multiply this base time by the TSM to get the actual operating time.

Check Coordination: Ensure upstream relays have longer operating times than downstream relays to maintain selectivity and prevent unnecessary outages.

Verify Settings: Test the relay under simulated fault conditions to confirm that it operates within the desired time range and does not violate equipment thermal limits.

Practical Considerations

Inverse Time Relays: The operating time decreases as fault current increases, so both PSM and TSM must be coordinated carefully.

System Changes: If CTs are replaced or system parameters change, recalculate PSM and TSM to maintain proper protection.

Time Margin: Maintain a small time margin (typically 0.3–0.5 sec...)

Article Content

Time Overcurrent Relay Calculator

Calculate time overcurrent relay settings with IEEE & IEC standards. Learn IDMT relay formulas, TMS/TD settings and protection coordination.

What is Time Grading in Relay Protection

Grading operating times of the relays What are time grading and relay coordination in protection philosophy? Let's try to figure out how to grade (or

What to Know About Protective Relays | EC& M

The time settings on upstream relays should delay their operation until the proper overcurrent device has cleared the fault. A selectivity study, plotting the time-current characteristics of every device in

Relay Setting Calculation Overview | PDF | Volt | Relay

The document provides calculations for relay settings for different components in a power system network. It calculates the fault current, protective relay settings, minimum operating time delay in overcurrent

Hi everyone, I'm working as the technical director in a power equipment-supplying company. We work with different distribution protection

Protection Relay Setting Interactive Calculator | FIRGELLI

Use this Protection Relay Setting Calculator to calculate pickup current, time multiplier settings (TMS), operating time, coordination time interval

Overcurrent Protection Relay Settings: Best Guide

Overcurrent protection relay settings are critical for any electrical distribution system. These settings ensure that equipment remains protected

Over Current Relay Setting Calculator

Our Overcurrent Relay Setting Calculator will accurately calculate your overcurrent relay settings. Enter rated current, Plug Setting Multiplier

PSM and TMS Settings Calculation of a Relay: Protection

Time Multiplier Setting is used to change the value of the operation of the relay. If it is more the relay will take more time to operate and vice versa.

FEEDER PROTECTION CALCULATIONS & SETTINGS

Relay 8 backs up relays 6 and 7, and should be co-ordinated with the slowest of these two relays. Relay 7 has an instantaneous setting of 1100 A, which is smaller than the setting of relay 6, and so the

[Pick Up Current | Current Setting | Plug Setting Multiplier and Time ...](#)

Time Setting Multiplier (TSM) scales the base time calculated from the relay's characteristic curves. The curve provides a base operating time for a

[IDMT and DMT Characteristics: Working Principle,](#)

Two of the most widely used relay operating characteristics in overcurrent protection are IDMT (Inverse Definite Minimum Time) and DMT

[Over Current Relay Setting Calculator | Electrical Protection Tool](#)

Calculate optimal overcurrent relay settings for motors, transformers, and feeders. Determine pickup current, time dial, and protection coordination accurately.

[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

[Setting the generator protective relay functions](#)

Protective relay functions and data This technical article will cover the gathering of information needed to calculate protective relay settings, the setting

[Overcurrent Protection Settings Guide | PDF | Relay](#)

The document discusses overcurrent protection calculations and settings for a power system network. It provides a single line diagram of the system and key

[The fundamentals of protection relay co-ordination and](#)

The relay settings are first determined to give the shortest operating times at maximum fault levels and then checked to see if operation will also be

[Relay Time Calculation Formulas | True Geometry's Blog](#)

Q: What factors influence the operating time of a protective relay? A: Several factors influence relay operating time, including the magnitude of the fault current, the relay setting, the CT

[Distribution Automation Handbook](#)

The operating time of definite time relays does not depend on the magnitude of the fault current, while the operating time of inverse time relays is shorter the higher the fault current magnitude is. The time

[The Basics Of Overcurrent Protection](#)

The operating time of both overcurrent definite-time relays and overcurrent inverse-time relays must be adjusted in such a way that the relay

The fundamentals of protection relay co-ordination and time ...

In this method, an appropriate time setting is given to each of the relays controlling the circuit breakers in a power system to ensure that the breaker nearest to the fault opens first. A simple

SEL-700G Generator Protection Relay | Schweitzer

The SEL-700G is the right solution for utility and industrial generator protection, with autosynchronizer, flexible I/O, and advanced communications. Apply the SEL

Protective Relay Settings

The time multiplier setting controls the relay's disc movement. The position of the moving contact is usually adjusted by turning the time multiplier knob, which ranges from 0.1 to 1.0.

Distribution Automation Handbook

The selectivity diagram is a set of specific time/current curves which shows all the time/current curves, that is, the operating characteristics of the relays of the concerned chain of protection relays.

Contact Us

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