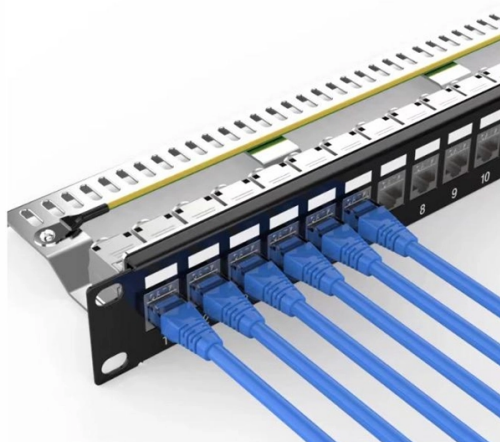


Medium Voltage Relay Protection Setting Table



Overview

RELAY SETTING CALCULATION To determine stability voltage for through fault Vs' Voltage across the relay at IFS (VS) CT Resistance (RCT) Relay Coordination.

Key Takeaways

Medium Voltage relay settings are defined using parameters like Plug Setting Multiplier (PSM) and Time Setting Multiplier (TSM) to ensure proper coordination, selectivity, and protection of the network.

Key Parameters for M

V Relay Settings1. Plug Setting Multiplier (PSM) PSM indicates how many times the relay secondary current exceeds the relay pickup current. It is crucial for IDMT (Inverse Definite Minimum Time) relays and determines the basic operating time.

A higher PSM results in faster tripping, while a lower PSM slows the relay response.

PS

M settings must comply with IEC 60255-151 standards for overcurrent relays and their operational characteristics. 2. Time Setting Multiplier (TSM) TSM scales the base operating time derived from the relay's characteristic curve.

It is used to achieve proper coordination between upstream and downstream relays. A lower TSM results in faster tripping, while a higher TSM provides backup protection.

TS

M selection should follow IEC 60255-3, which defines standard inverse, very inverse, and extremely inverse time-current characteristics. 3.

Overcurrent and Earth Fault Settings

Instantaneous Overcurrent (I_inst): Trip immediately when fault current exceeds a set threshold. Phase Overcurrent (I_phase): Uses IDMT characteristics with PSM and TSM to coordinate with downstream relays. Earth Fault (I_earth): Detects ground faults and isolates the faulty section while minimizing service disruption.

Example of a Typical MV Relay Setting Table

Relay Type	PSM	TSM	Function	Notes	Phase
Overcurrent	1.2	1.50			

8-1. 2Protects feedersCoordinated with downstream relaysEarth Fault0. 3-0.

51. 0-1. 5Detects ground faultsBackup protection for feedersInstantaneous OC5-10N/AImmediate tripFor high fault currentsUndervoltageN/AN/ALoad shedding / auto-reclosingOptional for network automationNotes: Values depend on network configuration, CT ratios, and load characteristics.

Coordination studies are recommended to ensure selectivity and minimize service interruptions.

M

V relay settings should be verified against network fault currents, voltage levels, and protection philosophy to maximize reliability and safety.

Best Practices

Perform a relay coordination study to determine optimal PSM and TSM values for all relays in the network. Consider network topology, including radial, looped, or meshed configurations, to avoid unnecessary outages. Use software tools or manufacturer-provided tables for initial settings, then fine-tune based on actual network measurements.

Regularly review and update settings after network modifications or load changes to maintain protection integrity. By following these guidelines and using the PSM/TSM framework, MV relay protection can be effectively coordinated to ensure reliable fault detection, minimal downtime, and safe operation of the electrical distribution system.

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

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

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homopolar voltage: if this voltage is measured between star point and ground, the voltage is nil, whereas, if the vectorial sum of the three phase voltages is measured, this is different from zero and

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e protection re-lays, which operate to separate the faulty part of the network from the rest of the plant. The protection relay setting must be calculated to give the plant the highest possible service

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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

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The document provides calculations for relay settings for different components in a power system network. It calculates the fault current, protective relay settings, and operating times for outgoing

Voltage Protection and Control REU615 Standard Configuration A

Numerical voltage and frequency protection and control in medium voltage networks
The relay is intended for voltage and frequency-based protection schemes in utility and industrial power systems,

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