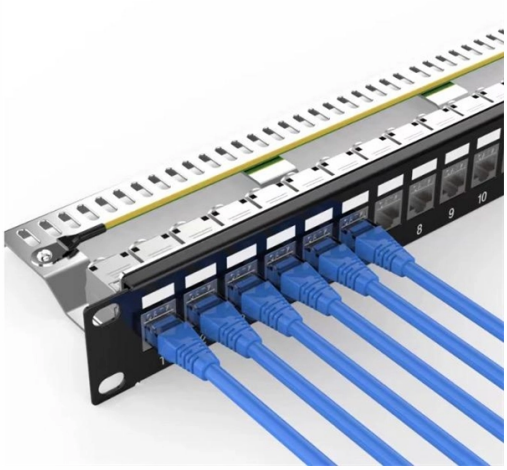
# Medium Voltage Relay Protection Setting Table



## 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

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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 TableRelay TypePSMTSMFunctionNotesPhase Overcurrent1. 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.

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## 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

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 (CTI), and plug setting multiplier (PSM)

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

Effective relay protection in HV/MV substations requires a thorough approach encompassing calculations, precise settings, meticulous coordination, informed relay selection, and

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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 differ-ent from zero and

MV Relay Settings for Switchgear

This document provides relay setting details for over current, earth fault, over voltage and under voltage protection for various 13.8kV switchgears and generator switchgears.

Microsoft Word

MV Protection Relay Applications The aim of this course is to present general protection principles and relay settings in the medium voltage distribution network.

What to Know About Protective Relays | EC&M

Protective relays are arguably the least understood component of medium voltage (MV) circuit protection. In fact, somebelieve that MV circuit breakers operate by themselves, without direct

Complete guide to protection of medium voltage networks

Good protection of MV networks This booklet aims at illustrating the basic criteria needed for good protection of machines and plants in medium voltage networks. Selection of the protection

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Protection Relay Settings Calculations Made Easy

Power System Protection Setting Calculations The electrical grid is a vast and intricate system designed to ensure the seamless flow of electricity from power generation facilities to end

Medium voltage products Technical Application Papers No.21 Protection ...

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 c lculated to give the plant the highest possible service

Fundamentals of MV Transformer Protection Using Relays

Learn the basics of medium-voltage transformer protection through Siemens, GE and Schneider Electric''s digital microprocessor relays.

Protective Relay Basics Part 2

Part 1: Protective relay compared to low voltage circuit breaker. Review fundamental concepts, components, and terminology using the electromechanical overcurrent relay as a foundation.

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Microsoft Word

For LRG medium voltage systems, a minimum delay of 0.35 seconds is chosen for electromechanical relays and 0.30 seconds for static relays to allow coordination with the motor relays that are typically

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 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, and operating times for outgoing

Voltage Protection and Contol REU615 Standard Configuration A

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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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