

Dual Approval of Relay Protection Settings



Overview

Relay Settings Calculations During external faults, the relay changes to high-security mode and switches from Slope 1 to Slope 2 to avoid relay mal-operation.

Key Takeaways

Dual approval or dual settings in relay protection ensures enhanced safety and operational reliability by providing two configurable sets of protective parameters that can be verified and applied selectively.

Concept of Dual Settings

Dual settings in relay protection involve two independent sets of protective parameters, often referred to as Set A and Set B, which can be applied to the same relay or trip unit. These settings allow operators to switch between configurations depending on operational conditions, such as normal operation versus maintenance activities downstream of the breaker. Both sets can include parameters for long-time, short-time, instantaneous, ground fault, directional overcurrent, and over-temperature protection.

Purpose and Benefits



Enhanced Safety: Dual settings reduce the risk of injury during maintenance by allowing minimized delays in protective functions, which lowers the potential arc flash energy exposure to personnel. **Operational Flexibility:** Set A and Set B are interchangeable, enabling operators to select the appropriate protection scheme for different scenarios without reprogramming the relay. **Coordination with System Protection:** Dual settings help maintain selectivity between upstream and downstream devices, ensuring that faults are cleared efficiently while minimizing unnecessary tripping.

Compliance with Standards: Dual settings support adherence to safety standards such as NFPA 70E and NEC Article 240. 87, which require methods to reduce clearing time for high-current devices during maintenance.

Implementation

Configuration: Using modern trip units like ABB's Emax 2 with Ekip Connect, technicians can program both sets of parameters and verify them digitally.

Activation: Operators can switch between Set A and Set B manually or automatically, depending on maintenance or operational requirements. **Verification:** Dual approval often involves review and confirmation by multiple qualified personnel before settings are applied, ensuring accuracy and reducing human error.

Integration with Other Protections: Dual settings can be combined with second instantaneous (2I) protection to further reduce arc flash hazards while maintaining system selectivity.

Practical Considerations

Relay Coordination: Proper selection of Plug Setting Multiplier (PSM), Time Setting Multiplier (TSM), and other parameters is essential to ensure that dual settings do not compromise coordination with upstream or downstream relays. **Documentation:** All settings, approvals, and changes should be documented to comply with regulatory and safety requirements. **Training:** Relay technicians must be trained in both the technical configuration and the safety rationale behind dual settings to ensure effective implementation.

Summary

Dual approval or dual settings in relay protection provide a robust mechanism for enhancing personnel safety, operational flexibility, and system reliability. By maintaining two verified sets of parameters, utilities can safely perform maintenance, reduce arc flash hazards, and ensure proper coordination across the power system. This approach is increasingly integrated into modern digital relays and trip units, combining technical precision with safety compliance.

Article Content

Relay Settings Calculations

During external faults, the relay changes to high-security mode and switches from Slope 1 to Slope 2 to avoid relay mal-operation resulting from CT saturation. In contrast to small CT errors for load current,

Adaptive Dual Setting Optimal Protection Coordination for Hybrid

This work proposes an adaptive dual-setting scheme for the optimal protection coordination of hybrid AC/DC microgrids (HMG), utilising a novel hybrid relay characteristic. The

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

Relay Setting Calculations Guide | PDF | Relay | Transformer

The document outlines the steps for performing setting calculations, including determining required technical data, protection schemes, relay functions, and submitting calculations for approval.

Enhanced Combined Protection Scheme Using Dual Setting

This paper proposes a new relay coordination scheme for dual setting directional overcurrent relay (DOCR) and distance relay based on the severity index of line outages, which is

Coordination of dual setting overcurrent relays in microgrid with ...

In this paper, a novel optimal protection coordination scheme is proposed, one which enables a common optimal relay setting which is valid in both operating modes of the microgrid.

White paper Arc flash energy reduction using ABB Emax 2 with

The following pages will explore setting “Second I” protection and dual settings remotely via a switch in order to provide instruction to engineers and designers regarding the requirements in 2011 NEC®

Configuring Relay Settings for Relay Technicians

Explore advanced relay configuration techniques for electric power transmission. Enhance precision and reliability with expert data analytics insights.

Relay Setting Calculation For REF615/ REJ601 | PDF

This document outlines relay setting calculations for a 100 MW / 150 MWp solar power plant at Bhadla, Rajasthan, detailing protective relay recommendations, design inputs, assumptions, and

Distribution Automation Handbook

Because the protection areas of the interlocking-based protection concept are not overlapping and because they do not reach into the protection area of the next relays in the protection chain, a

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 about relay setting and how it is achieved in real power systems.

Optimization of Multi level Relay Protection Adaptive Setting Strategy ...

To improve the reliability and sensitivity of multi-level relay protection in distribution networks with distributed power sources, this study designs an adaptive setting strategy optimization

Digital twin for advanced optimal coordination scheme of distance and ...

This study introduces a new optimal coordination scheme for distance and double-Stage Overcurrent (OCR) characteristics relays, utilizing digital twin technology. The proposed dual-stage

Microsoft Word

The relay setting parameters are used by the microprocessor protective relay to perform the devices intended application use according to the relay engineer's design.

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 calculations for the various

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

5.11: Adaptive Protection with Group Settings Change

5.11: Adaptive Protection with Group Settings Change 5.11 Adaptive Protection with Group Settings Change This section presents several examples of logic scheme customisation to provide functions

Understanding Protective Relays in Power Systems

Protective relays are critical components in power systems, providing essential protection for various elements such as generator sets, outgoing feeder and load networks, and incoming utility sources.

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

