

Relay protection code REF



AI Overview

Relay protection codes are standardized numbers (ANSI/IEEE C37.2) used to identify protective relay functions in electrical power systems. Overview of ANSI/IEEE Device Numbers

ANSI/IEEE device numbers are used to identify protective relays, circuit breakers, and other control devices in power systems. Each number corresponds to a specific function, such as overcurrent, voltage, or differential protection. These numbers are widely used in single-line diagrams, schematics, and relay documentation to indicate the type of protection provided by a device.

Common Device Numbers

- 50 – Instantaneous Overcurrent Relay
- 51 – Time Overcurrent Relay
- 27 – Undervoltage Relay
- 59 – Overvoltage Relay
- 87T – Transformer Differential Relay
- 87G – Generator Differential Relay
- 86 – Lockout Relay
- 11 – Multifunction Device (performs multiple protective functions)

Suffix letters or numbers can modify the function:

- G – Ground (e.g., 51G for ground overcurrent) or Generator (87G)
- N – Neutral (e.g., 59N for neutral displacement)
- F – Field or Fuse
- X, Y, Z – Auxiliary devices

Numeric suffixes – Distinguish multiple devices of the same type (e.g., 51-1, 51-2).

Directional Overcurrent Protection

Directional overcurrent (O/C) relays are designed to trip a circuit breaker only if a fault occurs in a specific direction. Unlike non-directional overcurrent relays, which trip whenever the current exceeds a set value, directional O/C relays require both current and voltage inputs to determine the fault direction. This ensures selective tripping in complex networks, such as ring or interconnected systems.

Key Points

- Non-directional O/C relay: Trips when current exceeds the set threshold.
- Directional O/C relay: Trips only if the fault is in the pre-set direction.

Used in transmission lines, feeders, and interconnected networks to improve coordination and prevent unnecessary outages.

Multifunction Relays

Modern microprocessor-based relays can perform multiple protective functions in a single device. These are often denoted as device 11 and may combine overcurrent, voltage, and differential protection.

Article Content

Restricted Earth Fault Protection of Transformer | REF Protection

So this REF relay will not be actuated for external earth fault. But during an internal fault, the neutral current transformer only carries the unbalance fault current and operation of Restricted

Protection and Control Device Numbers and Functions

PDF file

Protection relay selection table

Protection relay selection table Please note before using selection table! number = Number of stages, shots, X = Function supported inputs or outputs O = Function available as option

ANSI Relay Protection Code List

This document lists 57 ANSI codes and their corresponding descriptions of protection devices and functions. The codes cover a wide range of protection devices including overcurrent, undercurrent,

Restricted Earth fault Protection in Transformers & Generators

Consequently, REF protection is of utmost importance for generators and transformers. Why is this called Restricted E/F? The name Restricted is derived since the objective of the protection is to

REF615 Product Guide

Station communication link, fiber optic IRIG-B Lens sensor and optical fiber for arc protection Degree of protection of flush-mounted protection relay Environmental conditions Electromagnetic compatibility

Feeder protection relay REF615 ANSI

Feeder protection relay REF615 ANSI Reliability, security, and dependability with Relion® The REF615 is a dedicated feeder relay perfectly aligned for the protection, control, measurement, and

ANSI Relay Protection Code List | PDF | Relay | Detector (Radio)

This document lists 57 ANSI codes and their corresponding descriptions of protection devices and functions.

A quick guide for ANSI relay protection codes

Sometimes you can name them all in a heartbeat. Sometimes, you scratch your head to remember what is what. In this article, I combined all the main IEEE/ANSI definitions for protection

Protection Relay : Circuit, Working, Types, Codes & Its Uses

Relays are generally available in different types like reed, protective, thermal, electromagnetism, reed, Buchholz relay, Solid-state, and many more. This article provides brief

Restricted Earth Fault Protection of Transformer | REF Protection

REF Protection Definition: REF protection is a scheme used in transformers to detect internal earth faults by monitoring unbalanced currents in the transformer phases and neutral.

Restricted Earth Fault Protection

Sometimes REF protection is added to the primary as well (although if primary protection is required it may be preferable to consider full differential protection). As it is essential that the

Protection Relay

In the design of electrical power systems, the ANSI Standard Device Numbers denote what features a protective device supports (such as a relay or circuit breaker).

Feeder protection and control REF615 IEC

REF615 is a dedicated feeder IED aligned for the protection, control, measurement and supervision of utility and industrial power distribution systems.

ANSI Standard Device Numbers & Common Acronyms

ANSI Standard Device Numbers & Common Acronyms ANSI Standard Device Numbers & Common Acronyms

Practical handbook-for-relay-protection-engineers | PDF

The handbook for protection engineers includes guidelines on protective circuitry, protective relay principles, and testing procedures for switchgear and relays. It covers standard codes, wiring

ANSI codes and IEC Relay Symbols – Electrical Engineering

To assist the Protection Engineer in converting from one system to the other, a select list of ANSI device numbers and their IEC equivalents are given in the following figure.

Protection relays

Protection relays Numerical relays are based on the use of microprocessors. The first numerical relays were released in 1985. A big difference between

Restricted Earth Fault (REF) Relay – Working Principle, Diagram ...

Learn about Restricted Earth Fault relay (REF Relay) for transformer protection including wiring diagram, operation and relay settings.

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 a protective relay or protection relay – working with applications.

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

Feeder Protection Relay Operation Manual

typical protection function can be used. The manual contains technical data sorted per function. The manual can be used as a technical reference during the engineering phase, installation and commissioning.

ANSI Codes for Protection Relays | PDF | Relay | Switch

The ANSI has standardized codes for protective relay functions, with each function assigned a specific number. Some common codes include 50 for instantaneous overcurrent protection, 59 for

Feeder Protection REF615 ANSI Product Guide

4. Application The feeder protection relay REF615 ANSI model can be supplied with or without a dedicated ground or sensitive earth CT input. For those protection schemes where a ground CT is

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