Relay protection protection number

Article Overview

A relay protection number is a standardized ANSI/IEEE device number that identifies the specific function of a protective relay in an electrical system.

Overview

Relay protection numbers are part of the ANSI/IEEE C37.2 standard, which assigns numerical codes to protective devices to describe their function concisely and consistently across electrical systems . Instead of using long verbal descriptions, these numbers allow engineers, technicians, and utilities to quickly identify the type of protection a relay provides, improving clarity in diagrams, specifications, and communication.

Common Examples

o 50 - Instantaneous overcurrent relay, trips immediately when current exceeds a set threshold .
o 51 - Time overcurrent relay, trips after a preset time delay when current exceeds a set value .
o 50N / 51N - Instantaneous or time overcurrent relays for neutral or ground currents .
o 27 - Undervoltage relay.
o 59 - Overvoltage relay.
o 87T - Transformer differential relay.
o 59G - Ground overvoltage relay. Multifunction relays may combine numbers, such as 27/59, indicating a relay that provides both under- and overvoltage protection .

Purpose and Benefits

o Standardization: Ensures all parties (engineers, vendors, utilities) understand relay functions without ambiguity .
o Efficiency: Simplifies wiring diagrams and documentation by using concise numerical codes instead of lengthy descriptions .
o Clarity in Operation: Helps in selecting, configuring, and troubleshooting relays in medium and high voltage systems .

Application

Relay protection numbers are widely used in medium voltage (MV) and high voltage (HV) panels, often in combination with circuit breakers. They are powered by current transformers (CTs) and voltage transformers (VTs) to detect abnormal conditions like overcurrent, earth faults, or voltage deviations, and then signal or trip the breaker as needed . Letters can be added as suffixes or prefixes to specify the application more precisely, such as directional protection or ground-specific functions . In summary, the relay protection number is a

universal code that identifies the protective function of a relay, making electrical system design, operation, and maintenance more standardized and efficient.

Protection relay selection table Please note before using selection table! number = Number of stages, shots, X =

Understanding power system protection requires familiarity with ANSI standard relay numbers. These codes, detailed

The document discusses various relay symbols and device numbers used in protective relaying based on IEC 617 and ANSI/IEEE

Relay protection circuitry This handbook covers the code of practice in protection circuitry

This table details ANSI IEEE Standard Device Numbers as used for protective relaying in North America. Suffixes for numbers are

Numerical relay Protective relay In utility and industrial electric power transmission and distribution systems, a numerical relay is a

This handbook covers the code of practice in protection circuitry including standard lead and device numbers, mode of

This comparison summarize characteristics of all protection relay types described in previously published technical

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

The History of Numerical Relays The first protection devices based on microprocessors were employed in 1985. The

In electric power systems and industrial automation, ANSI Device Numbers can be used to identify equipment and devices in a

Protective relays are commonly referred to by standard device numbers. For example, a time overcurrent relay is

Protection relays Numerical relays are based on the use of microprocessors. The first numerical relays

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There are two methods for indicating protection relay functions in common use. One is given in ANSI Standard and uses a

This document lists ANSI device numbers and acronyms for protection devices used in power systems. It provides a table with two

To assist the Protection Engineer in converting from one system to the other, a select list of ANSI device numbers and their IEC

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