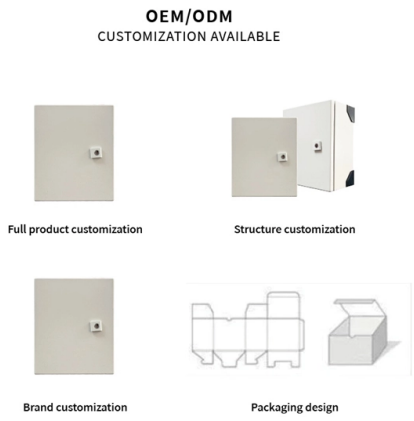
Relay Protection Device Identification



Overview

SIPROTEC: Multifunctional protection relays Experience the benchmark in grid protection, automation, and monitoring!

Key Takeaways

Relay protection devices are identified using ANSI/IEEE standard device numbers, which classify their protective functions and applications in electrical power systems.ANSI/IEEE Device Numbering System

In North America, protective relays and related devices are commonly identified using ANSI/IEEE C37.2 standard device numbers. Each number corresponds to a specific protective function, allowing engineers to quickly recognize the purpose of a device in a system diagram or schematic . For example:

• 50 – Instantaneous Overcurrent Relay

• 51 – Time Overcurrent Relay

• 59 – Overvoltage Relay

• 27 – Undervoltage Relay

• 87 – Differential Relay (e.g., 87T for transformer differential)

• 86 – Lockout Relay Suffix letters can be added to indicate specific applications or connections:

• N – Neutral connection (e.g., 50N for neutral overcurrent)

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• G – Ground (e.g., 51G for ground time overcurrent)

• T – Transformer (e.g., 87T for transformer differential)

• X, Y, Z – Auxiliary or additional functions
Multifunction Relays

Modern microprocessor-based relays can perform multiple protective functions in a single device. These are often denoted as “11” for multifunction devices, but the ANSI device numbers are still used in documentation to indicate which functions are included. For example, a relay labeled 27/59 combines undervoltage and overvoltage protection .

Applications in Protection Schemes

ANSI device numbers are used in:

• Single-line diagrams to indicate relay functions

• Control and protection schematics for circuit breakers and switchgear

• Coordination studies to ensure selective tripping and system reliability Directional overcurrent relays, for instance, use both current and voltage inputs to determine the fault direction. They only trip the circuit breaker if the fault occurs in the set direction, unlike non-directional overcurrent relays that trip based solely on current magnitude .
Summary

Relay protection device identification relies on standardized ANSI/IEEE device numbers, which provide a clear, consistent method to classify and document protective functions. Understanding these numbers, along with suffixes and multifunction designations, is essential for designing, operating, and maintaining reliable electrical power systems .

Article Content

Protection and Control Device Numbers and Functions

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

Relay Protection Device Codes List

It provides a comprehensive list of device numbers and their corresponding functions, as well as prefixes and suffixes for more

Protection Relay

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In the design of electrical power systems, the ANSI Standard Device Numbers denote what features a protective

ANSI/IEEE Relay Device Numbers List

This document lists standard device numbers for protective relays used in North America according to ANSI/IEEE Standard C37.2

ANSI Standard Device Numbers & Common Acronyms

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Protective relay

Important transmission lines and generators have cubicles dedicated to protection, with many individual electromechanical devices,

ANSI Codes

In the design of electrical power systems, the ANSI Standard Device Numbers (ANSI /IEEE Standard C37.2) denote

ANSI/IEEE Function Number Codes | Electric Power Measurement

ANSI/IEEE function codes also find application in relay trip circuit diagrams. Consider the following example of an electromechanical

Protection relays

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

Intro to Relays #2

Intro to Relays #1 – What are Relays, CTs, & PTs? Intro to Relays #2 – ANSI/IEEE Relay

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

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ANSI/IEEE Protective Device Numbers | PDF | Relay | Switch

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The document discusses the ANSI/IEEE C37.2 standard for protective device numbering and function identification. It

Protection Relay:Types, wiring diagram and working principle.

Protection relay is an electromechanical monitoring safety device which senses fault and provide trip signal to the breaker as per set

Design of an adaptive identification method for faulty operating states ...

Abstract To address the high complexity and diversity of faults in relay protection devices, as well as the challenges in

ANSI/IEEE Protective Device Numbering Guide | PDF | Relay

The document discusses the ANSI/IEEE standard for protective device numbering and function identification. It provides a list of 42

Relay Symbols and Device Numbers Guide

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

ANSI Codes – Device Designation Numbers

Device Numbers 1. Master Element is the initiating device, such as a control switch, voltage relay, float switch, etc.,

Protection Relay – ANSI Standards

ANSI device numbers In the design of electrical power systems, the ANSI Standard Device Numbers denote what

Relay symbols and device numbers; selection from IEC 617-,

Definition and function Master element is the initiating device, such as a control switch, voltage relay, float switch etc., that serves

Types of Electrical Protection Relays or Protective Relays

□□ Key learnings: Protective Relay Definition: A protective relay is an automatic device that senses abnormal conditions

Comparison of Protection Relay Types

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

Protective relay

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Protective Relays: Types, Working Principle & Uses

Protective relays are power system protection devices that monitor current, voltage, frequency, impedance, or

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A primary motor protective element of the motor protection relay is the thermal overload element and this is accomplished through

Basic protection relay knowledge

A fast and selective arc fault mitigation for air-insulated LV & MV switchgear and Relion protection and control relays and sensor

Relays Symbol Types, Functions, and Standard Electrical

Relay symbols show how relays work and connect in a circuit. This article explains the different types of relays, their functions, and

ANSI/IEEE Function Number Codes | Electric Power Measurement

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Decoding ANSI Codes for Protection Relays

Protective devices such as relays and circuit breakers use ANSI codes to represent their function and features. Think

Protection Basics

Review What is the function of power system protection? Name two protective devices For what purpose is IEEE

ANSI codes and IEC Relay Symbols – Electrical Engineering

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

To: [Customer Name]

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