

What does relay protection current I_r mean

Article Overview

I_r is the rated or continuous current setting in a relay or circuit breaker, defining the maximum current the device can carry indefinitely without tripping.

Definition and Function

In relay protection, I_r (rated current) represents the continuous current level that a protective device, such as a thermal relay or MCCB, can carry without initiating a trip. It is the baseline for long-time overcurrent protection, ensuring that the system can handle normal operating currents while protecting against sustained overloads. The I_r setting is typically expressed as a percentage of the device's nominal current (I_n). For example, if a breaker has a nominal rating of 1000 A, setting I_r to 80% allows the breaker to carry 800 A continuously without tripping.

Role in Overcurrent Protection

The long-time protection function uses I_r to monitor sustained overloads. When the current exceeds I_r , the relay or breaker begins a time-delayed trip based on an inverse-time characteristic: the higher the overload, the faster the trip. This allows temporary surges, such as motor starting currents, to pass without unnecessary tripping while protecting equipment from prolonged overcurrent. In thermal relays, I_r is used to calculate the tripping time according to standardized curves (e.g., IEC 60947-4-1), ensuring consistent protection across installations. For instance, a class 10A relay may trip within 2-10 seconds when subjected to 7.2 times the I_r from a c...

Article Content

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What to Know About Protective Relays | EC& M

Protective relays are arguably the least understood component of medium voltage (MV) circuit protection. In fact, some believe that

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

Relays are generally available in different types like reed, protective, thermal, electromagnetism, reed, Buchholz relay,

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Understand Relay Specifications to Get the Most Out of Your

Module Switching Specifications vs. Relay Switching Specifications Relay specifications do not always apply at the module level for a

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Protective Relay Basics Part 2

Part 1: Protective relay compared to low voltage circuit breaker. Review fundamental concepts, components, and terminology using

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Protective relay

In electrical engineering, a protective relay is a relay device designed to trip a circuit breaker when a fault is detected. : 4 The first

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Distribution Automation Handbook

The operating time of definite time relays does not depend on the magnitude of the fault current, while the operating time of inverse

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What is Overcurrent Relay?

The overcurrent relay is defined as the relay, which operates only when the value of the current is greater than the relay setting time.

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6 Types of Over Current Relay Used in Power System Protection

The relay trips the associated circuit breaker. Overcurrent relay protection protects the power systems and its equipments such as

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MCCB Current Setting | I_{2t} | I_r | I_{sd} | I_i | I_g Explanation

The meanings of the screen-printed items on the selector switches of the trip units are: I_r: adjustment of the long time

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The Basics Of Overcurrent Protection

The basic element in overcurrent protection is an overcurrent relay. The ANSI device number is 50 for an

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Overcurrent Protection Fundamentals R

OVERCURRENT PROTECTION FUNDAMENTALS Relay protection against high current was the earliest relay protection

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Over Current Relay Working Principle Types

In an over current relay or o/c relay the actuating quantity is only current. There is only one current operated element

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Types of Protective Relays

This article covers various types of protective relays, such as overcurrent, directional, and differential relays, highlighting their

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Meaning of Terms (I_n, I_o, I_r, I_m, I_{tr}, I_{inst}) on the Breaker

Good Answer: The I_n is Current I in n, I_o is Current I out o, I_r is Current rating, I_m is current I multiplier m and I_{inst} is

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Intro to Relays #1

Intro to Relays #2 - ANSI/IEEE Relay Device Numbers Intro to Relays #3 - What does SEL stand for? What is a

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Protection Basics

Protective Relaying System Current Transformers (CTs) Voltage Transformers (VTs)
52 Relay DC Supply Circuit

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Types and Applications Of Overcurrent Relay

The relay operates when the received signals (current and voltage) surpass a specified

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Basic protection relay knowledge

Power system stability means also ability to maintain acceptable voltage. Stability may be lost due to too long clearing time of faults (

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MCCB Trip Unit Settings Guide: I_r , I_{sd} , I_i & I_m Explained | VIOX

A: I_r stands for “long-time pickup current” or “rated current setting.” It represents the continuous current the breaker

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Pick Up Current | Current Setting | Plug Setting ...

From current setting we calculate the trip current of the relay. Say current setting of the relay is 150 % therefore pick

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FEEDER PROTECTION CALCULATIONS & SETTINGS

TAP or PICKUP VALUE: • A value that defines the pickup current of the relay. Current values are expressed as multiples of this

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MCCB (moulded cased circuit breaker Current)Setting | I_{2t} | I_r | I_{sd} ...

MCCB Current Setting: MCCB is nothing but a molded case circuit breaker. It is designed to operate all indoor

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Protection Basics

What is the function of power system protection? For what purpose is IEEE device 52 used? Why are seal-in and 52a contacts used

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Protective Relay Basics Part 2

The objective of this presentation is to convey a basic understanding of protective relays to an audience of technical professionals

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Understanding Protection Relays

Protection relays are a very important part of electrical systems. They mostly play the role to prevent the circuits from

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Instantaneous and Time-overcurrent (50/51) Protection

How Does Instantaneous and Time-Overcurrent Protection Work? Overcurrent protection prevents damage from the overheating of

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What Is I_o I_r I_{sd} In MCCB

I_R stands for Adjustable Long-Time Pickup Current. It allows you to set the current level at which the MCCB will trip for overload

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Protection Basics

Ground fault protection for these systems is usually provided by residual protection, either calculated by relay or by

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