

Secondary circuit inverse time relay protection



Article Overview

Inverse-time overcurrent relays in secondary circuits protect electrical installations by tripping faster at higher fault currents, ensuring selective and reliable protection.

Overview of Inverse-Time Relays

Inverse-time overcurrent relays are designed to operate with a time delay inversely proportional to the magnitude of the fault current. This means that the higher the current, the faster the relay trips, which is particularly useful for protecting feeders, transformers, and simple line systems in radial networks. These relays are commonly fed by current transformers (CTs) in the secondary circuit, allowing them to measure the primary current indirectly and operate accurately without being exposed to high voltages.

Operating Principle

The relay comprises a Ferraris disc mechanism or a numerical equivalent in modern relays. The disc rotates under the influence of the measured current, opposed by a recall spring, and the time dial setting (TDS) or time multiplier determines the operating time for a given current. The relay has two main adjustable parameters:

- Pickup current (I_s): The minimum current at which the relay begins to operate.
- Time/current characteristic curve: Defines how the operating time decreases as the fault current increases. Standard curves include normal, very, extremely inverse, a...

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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Difference between instantaneous, definite time and inverse time over ...

When electromechanical relays were still used, inverse time relays, definite time relays, and instantaneous relays were

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Overcurrent Protection Fundamentals R

From this basic method, the graded overcurrent relay protection system, a discriminative short circuit protection, has been

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Protective Relay Basics

The upstream relay should use an equal or less inverse curve type than the downstream relay. For example, an upstream Very

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Electromechanical Relays

Electromechanical relays have been the traditional backbone of electrical protection systems. While over recent years

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Inverse Time Overcurrent Relays and Curves Explained

The characteristics of overcurrent relays are based on operating times typically governed by a time vs. current curve.

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Protective Relay Settings

IDMT Electromechanical Relay Inverse Definite Minimum Time (IDMT) is affected by the inverse proportional relationship between

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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 Devices and their Time Current Curves

Discussion on overcurrent protection devices such as fuses, mcb, mccb, and relays used in a coordination study with introduction to

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IDMT and DMT Characteristics: Working Principle, Curve, Settings..

Overcurrent protection is the foundation of power system protection engineering. Every electrical network needs a

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Instantaneous and Time-overcurrent (50/51) Protection

Overcurrent protection prevents damage from the overheating of critical components and conductors, further preventing fires and

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Distribution Automation Handbook

The principle of inverse time protection is especially suited for radial networks where the variations of short-circuit power due to

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Protection Basics

IEEE C37.2 Device Numbers 51 Time-overcurrent relay 50 Instantaneous-overcurrent relay 67 Directional-overcurrent

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Over Current Relay and Its Characteristics

Over-current protection protects electrical power systems against excessive currents which are caused by short

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FEEDER PROTECTION CALCULATIONS & SETTINGS

In OC relays the coordination is based on the relay time-current characteristics of instantaneous and/or time delay units.

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(PDF) Application and settings inverse time relay ...

From the analysis results obtained new relay protection settings based on the calculation of short-circuit current settings

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ICM21-Relays-Brochure_05.pmd

As secondary relay parts, it is fed by current transformers. It is used to protect parts of electrical installations and simple line systems

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Overcurrent and Earth Fault Protection of Transformers

Inverse Time Overcurrent Relays employ a time delay that is inversely proportional to the magnitude of the fault

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Inverse time lag relays in protection

I'm dealing now with the different types of time responses of electromechanical relays: instantaneous, definite time lag, inverse time

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Protection Basics

52 Time-overcurrent relay Instantaneous-overcurrent relay Directional-overcurrent relay Distance relay Differential relay Circuit breaker

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Overcurrent protection

Three types of time delay are applied according to protection characteristics definite-time, inverse-time, and combined inverse-time

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Types and Applications Of Overcurrent Relay

Overcurrent protection protects electrical power systems against excessive currents which are caused by short circuits,

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Power System Protective Relays: Principles & Practices

Protective relays and devices have been developed over 100 years ago to provide “last line” of defense for the electrical systems.

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Exp. 1: Inverse Definite Minimum Time (IDMT) Over Current Relay

In an inverse definite minimum time, electromagnetic type over-current relay, the minimum time feature is achieved because of A)

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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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Inverse Time Overcurrent Relays and Curves Explained

Inverse Time Over Current is also referred to as Time Over Current (TOC) or Inverse

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Power System Protective Relays: Principles & Practices

Excerpts from Mason's Book “The Art and Science of Protective Relays: • The function of protective relaying is to cause the prompt

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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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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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Understanding Relay Timing Mechanisms: Instantaneous, Inverse Time

This lecture explores the key concepts and operational principles of three essential relay types used in electrical

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Microsoft PowerPoint

The time overcurrent relay characteristic curve best suited for coordination with fuses is Extremely Inverse, which is similar to the I^2t

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Inverse Time Overcurrent Relay Analysis

This document discusses inverse time overcurrent relaying for protection of three-phase transmission lines. It explains that

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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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The fundamentals of protection relay co-ordination and time ...

Among the various possible methods used to achieve correct relay co-ordination are those using either time or

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Types of Overcurrent Relay

The time-current characteristics for these relays are steeper than that of very inverse overcurrent characteristics.

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Overcurrent Protection Coordination Methodology — CTI, IDMT

The methodology applies to both relay-based protection (MV and HV systems) and device-based protection (LV

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INVERSE TIME DELAY OVERCURRENT RELAYS

The principal application of time delay over current relays (TDOC) is on a radial system where they provide both

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Inverse Time Over Current (TOC/IDMT) relay trip time calculator.

The Inverse Time Over Current (TOC/IDMT) relay trip time calculator calculates the protection trip time according to IEC 60255 and

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Distribution System Feeder Overcurrent Protection

Assume an IAC inverse-time relay in a circuit where the circuit breaker should trip on a sustained current of approximately 450

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Protective Relay Basics Part 2

51 – Time Overcurrent Curve Electromechanical: The curve is fixed and designated by relay model (i.e. CO-11 Very Inverse, CO-9

Contact Us

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