

How to set the relay protection current



AI Overview

Relay protection current is adjusted by setting the relay's pickup current using plug settings (PSM) and coordinating with CT ratios and time multiplier settings (TMS) to ensure proper fault detection and selective tripping.

Understanding Relay Current Settings

The current setting of a relay, also called the pickup current, determines the minimum current at which the relay will operate. It is expressed as a percentage of the CT secondary rated current. For example, if an overcurrent relay is rated at 1 A and you want it to operate at 125% of the system current, the pickup current is set to 1.25 A .

- Overcurrent relays typically have a current setting range of 50% to 200% in steps of 25%.
- Earth fault relays usually range from 10% to 70% in steps of 10% .

Using Plug Setting Multiplier (PSM)

The Plug Setting Multiplier (PSM) indicates how many times the actual current exceeds the relay's pickup current. It is calculated as: $PSM = \text{Fault Current} / (\text{Relay Pickup} \times \text{CT Ratio})$ Adjusting the PSM involves changing the number of active turns in the relay coil using a plug bridge. Moving the plug to different taps alters the pickup current . Higher PSM values result in faster relay operation according to the IDMT (Inverse Definite Minimum Time) curve

Article Content

Oct 26, 2025

How to Calculate Motor Protection Relay Settings Step

Calculate thermal overload, overcurrent, ground fault, and differential relay settings with

Mar 24, 2026

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

Dec 12, 2025

Overload relay setting and calculation

How to Set Overload Relay Protection An overload relay is a crucial device for motor control, designed to prevent motors from

Mar 14, 2026

Protection Basics

Protective Relaying System Current Transformers Voltage Transformers (VTs) (CTs) Relay

May 23, 2026

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

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

Jun 16, 2026

Protection Relay Setting Interactive Calculator | FIRGELLI

With this Protection Relay Setting Calculator, you'll be able to work out pickup current, time multiplier settings (TMS),

Oct 22, 2025

Basics of Protective Relaying and Design Principles

Perform power system simulations of selected faults and observe how a given protection principle (overcurrent, impedance, and

May 17, 2026

A Guide for Calculating Step Distance Relay Settings

The relay setting development process should include a series of steps that guides the settings engineer to achieve reliable and

Feb 10, 2026

How to Test Protective Relays Correctly

How to Test Protective Relays Correctly Usually I try to keep my posts as simple and practical as possible. This post is a little

Sep 27, 2025

RELAY SETTING CALCULATION

Pick up current Chosen Required T803 MV Tripping Directional co-ordination O/C Relay with operating time at fault Maximum

Oct 20, 2025

Protection Relay Setting Interactive Calculator | FIRGELLI

Interactive calculator for power system protection relay settings. Determine optimal pickup current, time multiplier

Aug 19, 2025

Relay Setting in Real Power System

To configure protective devices such as making a relay setting, having all the consideration of the fault severity and

Oct 17, 2025

Relay setting calculation|IDMT relay|Protection|Electrical Technology ...

In this video we have explained calculation for IDMT over current relay setting

Oct 22, 2025

Overcurrent Protection Relay Settings: Best Guide

Learn how to set overcurrent protection relay settings with a clear, step-by-step guide. Understand pickup settings,

Dec 11, 2025

The Basics Of Overcurrent Protection

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

Oct 13, 2025

Relays Part 4: The Protective Relay Basic Theory

The types of protective relays that exist are overcurrent, electromechanical, directional, distance, pilot, and differential

Mar 27, 2026

Relay Settings Calculations

During CT saturation, current resulting from CT errors appears as differential current and can cause relay mal-operation. To avoid

Mar 05, 2026

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

Oct 15, 2025

Relay Protection in HV/MV Substations: Calculations, Settings ...

Relay protection is essential to ensure the stability, reliability, and safety of electrical power systems. In HV (High

Jan 08, 2026

Relay Protection Settings (PSM, TSM, EL, OL, MF)

Protection relays employ a wide range of configurable parameters to identify defects & trip the breaker in a controlled

Nov 19, 2025

Introduction to Protective Relaying | Electric Power Measurement and ...

Introduction to Protective Relaying What are Protective Relays, or Protection Relays? Protective relays are used in industrial power

Jan 10, 2026

Over Current Relay Setting Calculator

An Overcurrent Relay Setting Calculator is a online calculator tool that determines the proper relay settings to

May 28, 2026

Protective Relay Basics Part 2

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

Mar 27, 2026

Overcurrent Protection Fundamentals R

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

Nov 11, 2025

Overload Relays Current Setting: Expert Guide for Electricians

An in-depth guide to overload relays current settings, focusing on correct matching of current ratings, trip settings for

Dec 12, 2025

How to choose high-capacity relays for inrush current prevention ...

This guide provides detailed information on high-capacity relays that are perfect for inrush current protection and discharge circuits,

Jul 16, 2026

Protection Relay Settings Calculations Made Easy

Power System Protection Setting Calculations The electrical grid is a vast and intricate system designed to ensure the

Jun 30, 2026

FEEDER PROTECTION CALCULATIONS & SETTINGS

Relay coordination is the process of selecting settings that will assure that the relays will operate in a reliable and selective way. In

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://ntmmgroup.co.za>

Email: sales@ntmmgroup.co.za

Phone: +27 82 471 2596

Address: Unit 7, Optic Park, 24 High-Tech Lane, Century City, Cape Town,
7441, South Africa

This document is for informational purposes only. Specifications subject to
change without notice.

