

Dual-power network relay protection



Overview

Siemens delivers high-performance with dual powered protection relay. Mounted in a ring main unit, the protection device detects cable faults on the network.

Key Takeaways

Dual-power network relays provide reliable protection by operating from both line-derived and auxiliary power sources, ensuring fault detection even in remote or power-limited conditions.

Overview of Dual-

Power Relays Dual-power network relays are designed to maintain protection functionality under varying power availability. They can draw power from current transformers (CTs) when the line is live and from an auxiliary battery or external supply when line power is unavailable. This redundancy ensures that the relay can detect and isolate faults such as overcurrent or earth faults even in remote substations or during maintenance scenarios where the main line may be de-energized or improperly grounded (Siemens 7SR46).

Key Functions and Features

Overcurrent Protection: Monitors current levels and trips the circuit if the current exceeds preset thresholds, preventing equipment damage and network instability.
Earth Fault Protection: Detects leakage currents to ground, which can occur due to insulation degradation or accidental grounding, and isolates the affected section.
Redundant Power Sources: Primary power from CTs allows operation without an auxiliary supply, while a battery or external voltage provides backup, enhancing reliability.

Fast Tripping and SOT

F (Switch-on-to-Fault): Some relays, like the 7SR46, include high-speed tripping to clear faults immediately after reclosure or if earthing clamps remain connected. **Communication and Monitoring:** Modern dual-powered relays feature USB or RS-485 interfaces for programming, fault record retrieval, and integration with SCADA or relay management software.

Compact and User-

Friendly Design: Devices often include LED indicators, mechanical trip flags, and LCD displays for easy status monitoring and configuration. **Applications:** Dual-power relays are primarily used in medium-voltage distribution transformer stations, ring main units, and secondary substations, especially in remote or unmanned locations where continuous auxiliary power may not be guaranteed. They are critical in industrial grids, distribution networks, and microgrid systems, providing protection while accommodating distributed energy resources (DERs) and backfeed scenarios.

Advantages

Enhanced Reliability: Continuous protection even if one power source fails. **Flexibility:** Can operate in live or de-energized conditions. **Integration with Modern Systems:** Supports numerical protection, event logging, and communication with control platforms.

Safety: Reduces risk of equipment damage and arc flash incidents by ensuring rapid fault isolation.

Examples of Dual-

Power Relays

Siemens Reyrolle 7SR46: Provides overcurrent and earth fault protection, CT-powered with auxiliary battery backup, compact design, and USB/RS-485 communication.

Eaton MPCV NX

G Network Protector Relay: Differentiates between reverse current and customer-generated power, integrates with DER systems, and maintains network protection without additional monitoring relays. Dual-power network relays are therefore essential for robust, reliable, and flexible protection in modern electrical distribution systems, particularly where redundancy and remote operation are critical.

Article Content

Siemens delivers high-performance with dual powered protection relay

Mounted in a ring main unit, the protection device detects cable faults on the network and operates quickly to disconnect the fault. The 7SR46 dual powered protection relay is to be

Reyrolle 7SR46 Dual Powered Overcurrent Protection

In absence of auxiliary voltage, the sensitivity of the relay is the minimum phase current required for the relay to energize, detect a fault, and trip as per the configuration.

Dual Ethernet Ports 8-ch Relay Module (C), Modbus RTU Protocol,

This product is an 8-ch relay module designed for industrial environments, featuring dual Ethernet interfaces control and 8 digital inputs. It adopts Modbus RTU / Modbus TCP protocols, supports

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. They are intended to quickly identify a fault and isolate it so the balance of

Protection relays

Numerical relays are based on the use of microprocessors. The first numerical relays were released in 1985. A big difference between conventional electromechanical and static relays is how the relays

A Dual-powered Protection Relay for Overcurrent and

A Dual-powered Protection Relay for Overcurrent and Earth Fault Protection Siemens introduces a new addition to the Reyrolle protection product

Protection Relays | Medium & high voltage power system protection

Discover protection relays for generators, motors, transformers, feeders and busbars, designed for reliable and efficient power system protection.

MPCV NXG Network protector relay

Eaton's MPCV NXG Network Protector Relay, featuring enhancements for the modern network grid, is a direct replacement for any type or vintage network protector.

Redundancy Strategies for Distribution Protection

Abstract—Redundancy of protection and control systems is very common at transmission levels of the electric power system. Redundancy is considered critical for networked electric power systems

Protection Relays by Range

Our catalog of Protection Relays provide leading and reliable protection and control for any network application. The latest Easergy Protection Relays also offer

Distributed relay protection for distribution network based on hybrid ...

The distributed power supply is gradually connected to the distribution network, the original single power source radiant network pattern of the distribution network no longer exists. The

Digital twin for advanced optimal coordination scheme of distance and ...

Integrating Distributed Generators (DGs), particularly renewable energy sources such as wind systems, into traditional power network presents significant protection coordination challenges.

A review on adaptive power system protection schemes for future

Protection devices such as fuses and protective relays are widely used to identify and isolate faulty areas from operational networks. These devices operate at a pre-defined protection

Multiapplication protection and control

ABB's multiapplication protection and control offering covers the full range of basic power distribution applications, provides complete coverage for advanced power generation and distribution

Dynamic Dual-Level Overcurrent Protection Scheme for Distributed

Abstract The integration of distributed generators (DGs), particularly renewable energy sources, into conventional distribution networks (DNs) presents significant protection challenges.

Formal performance analysis of optimal relays-based protection

For illustration purposes, we use formal models for the quantitative verification of a state-of-the-art DS-DOCRs-based protection scheme for power distribution networks using the

Line differential protection and control RED615 ANSI

RED615 is a phase-segregated, two-end, line differential protection and control relay for protection, control, measurement and supervision of overhead line and cable feeders in utility and industrial

Dual powered protection relay from Siemens

Mounted in a ring main unit, the protection device detects cable faults on the network and operates quickly to disconnect the fault. The 7SR46 dual powered protection relay is to be

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

