

Fault diagnosis by relay protection



Article Overview

Fault diagnosis in relay protection systems involves detecting, locating, and predicting faults in protective relays and circuit breakers using advanced methods like AI, machine learning, and data-driven fault tracing.

Overview of Relay Protection Systems

Relay protection systems (RPS) are critical for maintaining the safety and stability of power systems. Protective relays (PRs) detect abnormal conditions such as overcurrent, short circuits, or voltage deviations, and issue trip signals to circuit breakers (CBs) to isolate faulty sections, minimizing damage and power loss. Faults in PRs or CBs, including maloperation or rejection, can compromise system reliability, making accurate fault diagnosis essential.

Traditional vs Modern Fault Diagnosis

Traditional fault diagnosis methods rely on manual inspection, predefined thresholds, and static logic, which may struggle with complex, large-scale power systems. Modern approaches leverage artificial intelligence (AI), machine learning, and data mining to improve accuracy, speed, and adaptability. These methods can process massive amounts of operational data in real time, identify fault types, and locate faults efficiently.

AI-Based Fault Diagnosis

AI-based systems use deep learning, neural networks, and machine learning algorithms...

Article Content

Apr 30, 2026

Research on Fault Diagnosis Method for Relay Protection Based on

This article proposes a relay protection fault diagnosis method based on deep learning, which improves the accuracy and efficiency

Jan 14, 2026

A hidden fault diagnosis method of relay protection considering the ...

Abstract: the identification of hidden faults of relay protection equipment is of significance for detecting abnormalities

Jun 23, 2026

A fault state evaluation method for relay protection equipment

The healthy operation of China's new electric power system is highly dependent on the relay protection equipment as the first line of

Feb 12, 2026

Research on the analysis method of power system relay protection

The action characteristics of power system relay protection devices can well analyze whether the relevant actions are

Nov 08, 2025

Fault Diagnosis Method of Relay Protection Based on Expert

Abstract. For a long time, the fault diagnosis technology of relay protection consists of isolated cases and does not have a systematic

Nov 01, 2025

Microsoft Word

Validation and diagnosis of relay operation is very important to protection engineers in fault analysis. This paper presents

Jan 09, 2026

Study of Relay Protection Fault Analysis and Treatment Measures for ...

The article first analyzes the role, composition, requirements of relay protection, and then analyzes the fault analysis of power system

Oct 12, 2025

Fault Diagnosis Analysis of Relay Protection System Based on

The fault diagnosis analysis system for a relay anomaly and protection system in a circuit breaker is in this case classified, thus

Mar 19, 2026

A state evaluation and fault diagnosis strategy for substation relay ...

Abstract and Figures Ensuring the operational reliability of substation relay protection systems through rapid defect

Jul 11, 2026

Intelligent diagnosis method of relay protection defects based on ...

The healthy and reliable operation of relay protection devices is of great significance for improving the safe and stable operation of

Oct 23, 2025

Artificial Intelligence Based Fault Diagnosis and Relay Protection ...

This article can promote the development of power grid fault diagnosis and protection technology, which is conducive to providing

Dec 29, 2025

Fault Tracking Method for Relay Protection Devices

A method of fault tracking for relay protection devices is presented in this paper. Fault tracking means that after the

Feb 08, 2026

Fault diagnosis of intelligent substation relay protection ...

This study focuses on the fault diagnosis of an intelligent substation relay protection system based on Transformer

Mar 06, 2026

Fault Tracing Method for Relay Protection System ...

The fault types and corresponding alarm messages for the relay protection system and the circuit breaker are

Dec 10, 2025

Hidden Fault Diagnosis Method of Relay Protection Equipment Based

Hidden Fault Diagnosis Method of Relay Protection Equipment Based on Multi-layer Collaboration of Equipment, Substation Control

May 14, 2026

Research on the method of constructing a knowledge map of relay ...

By understanding the characteristics of the power grid industry, analyzing the types of faults of relay protection devices

May 26, 2026

Research on Intelligent Operation Inspection Fault Diagnosis Method

Therefore, the research on intelligent operation inspection fault diagnosis method of substation relay protection logic link is proposed.

Dec 25, 2025

Fault diagnosis technology of relay protection secondary circuit in ...

According to different types of requirements, different fault diagnosis models can be established to carry out on-line monitoring and

Sep 23, 2025

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

The experimental results demonstrate that the proposed method accurately identifies faulty operation states in relay

Aug 20, 2025

Fault Tracking Method for Relay Protection Devices

Fault tracking means that after the failure of relay protection devices, the anomalies and warning information are

Jul 08, 2026

Research on fault diagnosis method of substation relay protection ...

Aiming at the problems existing in the fault diagnosis of power equipment by the traditional methods, this paper

Mar 16, 2026

Article Tracking for Relay Protection Devices

Abstract: A method of fault tracking for relay protection devices is presented in this paper. Fault tracking means that after the failure

Apr 26, 2026

8 essential relay operating principles of catching faults

Relay operating principles may be based upon detecting these changes, and identifying the changes with the

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