

Differential Protection Method for Distribution Network Automation



Overview

Given the exponential growth of data in distribution networks and the security considerations of wireless communication like 5G, this paper proposes a secure protection technique for distribution network differential protection based on dual compressed sensing theory. The characteristic mode decomposition. Weilin Tong, State Grid Wuxi Electric Power Co. With the high penetration of distributed generation and gradual increase in loop network structures, existing over-current protection in distribution networks is difficult to apply. The use of current differential protection. This paper proposes a novel current differential protection (CDP) scheme that considers the delay behaviors of positive- and negative-sequence component extractors for IIDGs in DNs.



Article Content

Mar 21, 2026

A new differential protection method for distribution networks with DGs ...

In order to solve the problem, the new adaptive differential protection method is proposed, which is based on the traditional standard product brake differential protection criterion, making full

Nov 21, 2025

Differential protection strategy for distribution network based on 5G ...

Aiming at distribution network differential protection based on 5G communication technology, this study adopts an adaptive frequency conversion transmission mechanism to significantly reduce the data

Apr 18, 2026

Distribution Network Differential Protection Method Based on Dynamic ...

In reference , a protection method adapted to delay jitter is proposed, but the threshold in the protection criterion is fixed, so it is difficult to apply to distribution networks with

Dec 10, 2025

Active Distribution Network Differential Protection Scheme Based on ...

With the increasing penetration of inverter-interfaced distributed generation (IIDG), the short-circuit current characteristics of distribution networks have changed, making traditional protection methods

Jun 09, 2026

Differential Protection for Distribution Grids Based on Dual

Given the exponential growth of data in distribution networks and the security considerations of wireless communication like 5G, this paper proposes a secure protection technique for distribution network

May 06, 2026

Protection and Fault Isolation Scheme for DC

The current protection configuration for DC distribution networks remains imperfect, with most strategies still based on those used in AC systems

Nov 15, 2025

Relay protection of multilevel differential distribution network based ...

Relay protection of multilevel differential distribution network based on feeder segment switch Qingjie Wang School of Electrical and Electronic Engineering, North China Electric Power University ...

Nov 24, 2025

Automatic Differential Protection of Distribution Network Line Current ...

Aiming at the inefficiency of traditional protection systems in distribution network line faults, a distribution network line current automatic differential protection method based on DTW algorithm and phase

Jul 08, 2025

A novel differential protection scheme for distribution lines under ...

A distribution network current differential protection based on 5G wireless communication is proposed in to achieve full line quick action for phase-phase short circuit faults in distribution ...

Oct 09, 2025

A d-axis based current differential protection scheme for an active ...

The emergence of distributed generators has changed the operational mode and fault characteristics of the distribution network, in a way which can severely influence protection. This

Oct 21, 2025

A d-axis based current differential protection scheme for an active ...

Compared to conventional phase-based current differential protection, the proposed protection reduces the number of required communication channels, and is suitable for distribution

Jul 09, 2025

Adaptive Differential Protection Method for Active Distribution Network ...

The access to a large number of distributed generation (DG) changes the structure of the distribution network and fault characteristics, and the traditional thr

Oct 14, 2025

Line Current Differential Protection over MPLS

Applications like Automated Metering Infrastructure (AMI), Demand Response (DR), and Distributed Automation (DA) reduce OpEx and create potential new revenue streams for utilities, but they almost

Feb 25, 2026

Research on adaptive differential protection methods for smart ...

There are many devices in the smart distribution network, and the current differential protection methods are stronger for fiber optic or Ethernet communication, which cannot solve the problem of low

Apr 21, 2026

A Current Differential Protection Scheme for Distribution

Investigating IIDG fault behaviors-based protection scheme will benefit the grid's safety and stability. This paper proposes a novel current

Jan 26, 2026

A new scheme for current differential protection of active distribution ...

After distributed power sources with high penetration are connected to the distribution network, the conventional current differential protection fails to apply the generalized Kirchhoff's current law due to

Oct 20, 2025

Current Differential Protection for Active Distribution Networks Based ...

The uncertainty in the direction and magnitude of fault current is a thorny issue for active distribution network (ADN) protection. Current differential protection (CDP) is suitable for ADN with

Oct 20, 2025

Differential protection scheme for distribution network with ...

Aiming at the problem that the traditional relay protection device can not meet the actual demand when the single-phase ground fault occurs in the distribution network with distributed

Feb 25, 2026

A Power Differential Protection Scheme for Distribution Network with ...

Distribution network changes from single-source network to multi-source network with bi-directional power flow due to connection with a large quantity of distributed generation (DG). Traditional three

Apr 12, 2026

Novel Differential Protection for Distribution Network Feeders with ...

As the fault characteristics in distribution feeders become increasingly complex, differential protection is believed a feasible method. When there are intermed

Apr 06, 2026

Differential protection of distribution lines based on Hausdorff ...

Abstract Given the weak time synchronization capability of the feeder terminal unit (FTU) in the distribution network, a new differential protection method for the distribution network is proposed.

Dec 29, 2025

Adaptive current differential protection for active distribution ...

In this paper, the cause of the starting delays of protective relays is analyzed through assumptions and approximations. On this basis, an adaptive current differential protection method for

Nov 03, 2025

Differential protection strategy for distribution network based on 5G ...

In terms of protection strategy, the differential allowable signal and the differential protection startup logic are separated, and a novel action method and protection logic suitable for weak infeed

Feb 27, 2026

A Current Differential Protection Scheme for Distribution

The high-level proliferation of inverter-interfaced distributed generators (IIDGs) in modern distribution networks (DNs) has changed system

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