Algorithm for Micro-Relay Protection

Overview

Metaheuristic algorithms such as NSGA-II, JAYA, and the Water Cycle Algorithm (WCA) have demonstrated the capability to minimize relay operating times, while ensuring selectivity constraints. In order to deal with these dynamic changes, this paper addresses an adaptive central microgrid controller-based protection and relay coordination scheme, which revises the relay settings dynamically (both radial and looped configuration) for every change in topology. In the proposed algorithm, the. The relay1 block protects the distribution_line1 block and also acts a back-up for the relay2 block. For the complete history of this paper, refer to the next page. Presented at the 72nd Annual Georgia Tech Protective Relaying Conference Atlanta. This study addresses the coordination of Directional Overcurrent Relays (DOCRs) in MGs through a Mixed-Integer Linear Programming (MILP) model. The main contribution is a MILP model that optimizes relay settings, including Time Multiplier Settings (TMS) and standard characteristic curves, to. To mitigate the relay coordination problem in microgrids, this paper puts forth a solution in the form of an adaptive protection scheme.

Article Content

Nov 07, 2025

Adaptive Protection Scheme Using Optimal Coordination of Directional ...

The integration of Distributed Generation (DG) in Grid-connected systems presents challenges in maintaining reliable protection

May 19, 2026

Using Protective Relays for Microgrid Controls

Abstract—This paper explains how microprocessor-based protective relays are used to provide both control and

Apr 04, 2026

Adaptive protection coordination scheme in microgrids using

This paper presents a novel approach for protection coordination in AC MGs that incorporates non-standard

Jul 07, 2026

CONFIGURING MICROPROCESSOR-BASED RELAY SYSTEMS

Unfortunately, many owners fail to maximize the protection and value aforded by their new microprocessor-based relay systems.

Feb 20, 2026

Optimization of relay coordination in communication

Coordination of relays is a critical aspect of the protection system. This paper outlines the

Jan 13, 2026

Comparative study of heuristic algorithms for coordination of ...

Article Open access Published: 08 May 2025 Comparative study of heuristic algorithms for coordination of industrial

Feb 20, 2026

Optimal Microgrid Protection Coordination for Directional ...

By leveraging advanced optimization techniques and diverse characteristic curves, this study contributes to the

Oct 30, 2025

OpenRelay: Open Source Protection Algorithms for Electric Power

Modeling and simulation of power systems presents itself as an important tool for performance evaluation of protection systems.

Jul 13, 2026

2015-49(3)-2.vp

But, taking into account the development of intelligent networks, FPGA technology is more attractive compared with micro-processor

Feb 28, 2026

Overcurrent Relay Protection in AC Microgrid

The relay block comprises the two protection units, phase protection unit and earth protection unit. When the value of the current in

Sep 29, 2025

(PDF) Relay Protection and Automation Algorithms of ...

The use of specialized trainable triggering elements is studied both for building new protections and for improving the

Aug 28, 2025

An Adaptive Centralized Protection and Relay Coordination Algorithm

The coordination between relays is carried out by MCC in a time-graded manner based on microgrid central

Jan 22, 2026

A review on adaptive power system protection schemes for future

By integrating feedback loops and adaptive algorithms, the protection scheme can dynamically adapt and optimize

Aug 21, 2025

Optimization of relay coordination in communication-assisted

The concept of microgrids (MGs) has gathered considerable attention to enhance the efficiency of contemporary

Mar 11, 2026

Development of an Adaptive Protection Scheme for Microgrid

To mitigate the relay coordination problem in microgrids, this paper puts forth a solution in the form of an adaptive protection scheme.

Feb 09, 2026

An Adaptive Centralized Protection and Relay Coordination Algorithm

Hence, the magnitude of fault current is dynamic in nature. In order to deal with these dynamic changes, this paper

Oct 18, 2025

Optimal Protection Coordination for Grid-Connected and Islanded ...

Optimal Protection Coordination for Grid-Connected and Islanded Microgrids Assisted by the Crow Search Algorithm:

May 30, 2026

Optimal adaptive coordination of overcurrent relays in

Simulations and analyses substantiate the efficacy of the algorithm in optimizing the

Dec 28, 2025

Algorithm for microprocessor-based relay protection

Generalizing modern microprocessor-based relay protection at the power transmission line, a design of relays based

Jul 06, 2026

Microgrid relay protection scheme based on harmonic footprint of short ...

This paper proposes a microgrid relay protection scheme combining a fast fault detection algorithm and low voltage ride through

Oct 07, 2025

(PDF) Design and Implementation of Multifunction Relay Based on ...

The multi-function relay was implemented to work on a single phase. The setting of the multi-function relay

Mar 28, 2026

Review of optimization techniques for relay coordination in ...

Evolvement of algorithms from conventional to Hybrid methods which combines two different metaheuristic methods to

Apr 06, 2026

(PDF) New and traditional relay protection algorithms ...

We demonstrated the advantages of using new differential-logic and multi-parameter relay protection algorithms, as

Oct 19, 2025

Optimal coordination of overcurrent relays for microgrid operation ...

Therefore, optimum relay coordination is necessary for adequate protection of the microgrids. This paper proposed

Sep 16, 2025

Relay Protection and Automation Algorithms of Electrical ...

The tendencies and perspective directions of development of modern digital devices of relay protection and automation

Jan 03, 2026

Research on Power System Relay Protection Method Based on

Finally, the power system relay protection based on machine learning algorithm is deeply studied, and the specific implementation

Feb 03, 2026

Microprocessor Based Protection Relay

Microprocessor Based Protection Relay: Reliable and accurate protection schemes are required for any system. Microprocessors

Jun 03, 2026

Artificial intelligence algorithms enhancing relay protection and ...

In this research project, Artificial Intelligence (AI) algorithms applied to the relay protection of high and low-voltage

Sep 07, 2025

Microsoft Word

In spite of the developments of complex algorithms for implementing protection functions, the microprocessor-based relays marketed

Contact Us

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

Website: https://iiss.co.za
Email: sales@iiss.co.za
Phone: +27 63 174 2895
Address: Unit 8, Innovation Park, 15 Rivonia Road, Sandton, Johannesburg, 2196, South Africa

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