Relay Protection Digital Filtering

Overview

Digital protective relays use finite impulse response filters with sliding data windows for band-pass filtering of voltages and currents and measurement of phasors. Cosine, Fourier, and Walsh data windows are commonly used. In a digital relay, this signal is sampled N times per cycle. Thus the input is represented by Digital filters, such as those discussed in this paper, process the sampled data points, Sk, by multiplying each sample by a coefficient determined by the type of digital filter employed. This process is. Presented at the V Seminário Técnico de Proteção e Controle Curitiba, Brazil August 28–September 1, 1995 Previously presented at the IEEE WESCANEX 93 Communications, Computers and Power in the Modern Environment, May 1993, and 47th Annual Georgia Tech Protective Relaying Conference, April 1993. Edmund O. Schweitzer, III and Daqing Hou Schweitzer Engineering Laboratories, Inc. The highest frequency component determines the minimum sampling frequency Definition AF introduces certain phase shift (time delay) between its input and output signals.

Article Content

Selection of Digital Filter for Microprocessor Protection Relays

Simulation results show that Boxer-Thaler and bilinear filters have better accuracy during transient current measurements than the analog filter. The study allows concluding that in many cases the

FILTERING REQUIREMENTS FOR DISTANCE RELAYS

Protective relays must filter their inputs to reject unwanted quantities and retain signal quantities of interest. Distance relays have especially critical filtering require-ments, because they must make

Enhancing Phasor Estimation in Digital Protective Relays

Digital protective relay usually have built-in anti-aliasing analog filters, A/D Converter, a phasor estimation algorithm and a data processing unit. The A/D converter is used to convert signals from

Capacitor and filter bank

Capacitor and filter bank protection Shunt capacitor banks, also called filter banks, are widely used in transmission and distribution networks to produce reactive power support. ABB''s capacitor bank

Dynamic phasor-driven digital distance relays protection

This paper describes an in-depth signal processing analysis of the second-order Taylor-Kalman-Fourier (T 2KF) filter as input signal to a phase comparator in digital distance relay.

A New Digital Filter Using Window Resizing for Protective Relay ...

Digital protective relays use finite impulse response filters with sliding data windows for band-pass filtering of voltages and currents and measurement of phasors. Cosine, Fourier, and Walsh data

Variable Digital Filter Response Time in a Digital Distance Relay

This paper will investigate the effect of digital filtering on the operating time of a generic digital distance relay. Two popular filtering approaches will be considered: the Cosine Filter and the Fourier Filter.

Digital filter for phasor estimation applied to distance

Digital distance relays have been applied for protecting transmission lines and most of them are based on voltage and current phasors estimation. The

(PDF) Adaptive filtering for noise reduction in the

Abstract and Figures This paper describes an adaptive filtering to reduce noise in the analog input circuits of microprocessor-based protection relay

Digital Protective Relay Advantages

The logic block of a digital relay performs the following tasks; it applies certain characteristics to the measured signals (such as zones in an impedance relay)

Dynamic phasor-driven digital distance relays protection

Due to this fact, new filtering techniques needs to be incorporated into the digital relays architecture. In special, digital distance relays are typically applied for the transmission lines''

Filtering for Protective Relays

Filtering for Protective Relays Edmund O. Schweitzer, III, and Daqing Hou Schweitzer Engineering Laboratories, Inc.

Comparative assessment of digital filters for

This article presents the implementation of digital filters used in microprocessor-based (digital) relay protection current measuring elements. It

(PDF) DIGITAL FILTERS IMPLEMENTATION IN

This article presents the implementation of digital filters used in digital relay protection current measuring elements. Mathematical descriptions of the

Microsoft Word

Digital relays are the last generation relays. Based on microprocessor and software, these devices are applied mainly in transmission system and generator unit protection but their applications grow

DIGITAL COMMUNICATIONS FOR RELAY PROTECTION

Part 1 describes the digital communications architecture and topology that can be applied to existing and new protection systems, digital channel characteristics and transport systems applicable and not

A new digital filter using window resizing for protective relay ...

This paper presents the theory, implementation, laboratory test results, and a field case example of a new filtering method for protective relaying based on window resizing.

New SIMULINK Libraries for Modeling Digital Protective Relays and ...

Abstract — This paper presents five SIMULINK li-braries for modeling, design, optimization and testing of digital protective relays. The new MATLAB based software package includes the following

Digital Filtering Algorithms for the Differential Relaying of Power ...

This paper reviews the digital differential relaying algorithms proposed by different authors for the protection of power transformer and compares them as to their speed of response,

Numerical relay

The digital protective relay is a protective relay that uses a microprocessor to analyze power system voltages, currents or other process quantities for the purpose of detection of faults in an electric

Relay Filters and Aliasing Effects | PDF | Electronic Filter

The document discusses the basic components and design of digital relays. It describes anti-aliasing filters, amplitude and phase response, and compares

FILTERING REQUIREMENTS FOR DISTANCE RELAYS

Several digital filters were evaluated in one of our previous papers. Because of the space limitation here, we consider and compare CAL, cosine, and Fourier filters only. We also examine the differences

Digital Relay Architecture | Delgado Relay Protection Reference

In this example, the digital relay architecture enables robust and accurate fault detection, faster fault clearance, and efficient coordination between relays. The configurability of the relay

A New Digital Filter Using Window Resizing for Protective Relay ...

A New Digital Filter Using Window Resizing for Protective Relay Applications Bogdan Kasztenny, Mangapathirao V. Mynam, Titiksha Joshi, and Chad Daniels Schweitzer Engineering

Comparison between digital protection algorithms | Digital Protection ...

Most protection functions are performed by digital relays using the fundamental components of voltage and current signals fed to the relays. During a fault condition, voltage and

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