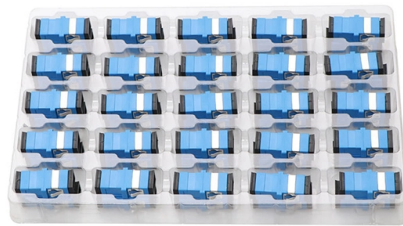


Relay protection tester for measuring harmonics



AI Overview

Advanced relay protection testers like the RELAYSTAR-1600S and CMC 356 can measure harmonics while performing multi-phase relay testing for substations and power systems. Key Features of Harmonic-Capable Relay Testers

Multi-Phase Outputs: Modern testers support multiple current and voltage channels, often 6-phase current and 4- to 6-phase voltage outputs, enabling comprehensive testing of three-phase and multi-phase systems, including transformer differential protection and complex relay schemes (HVTestPro, RELAYSTAR-1600S, CMC 356).

Harmonic Measurement: These testers can generate and analyze harmonic components in current and voltage waveforms, allowing engineers to evaluate relay performance under distorted or non-sinusoidal conditions, which is critical for detecting misoperation in real-world power systems (RELAYSTAR-1600S).

Portability and Synchronization: Devices like the RELAYSTAR-1600S are portable and can synchronize across multiple substations using GPS, facilitating end-to-end testing without complex wiring setups. Compact designs and laptop-based software interfaces simplify field deployment (RELAYSTAR-1600S).

High-Fidelity Signal Generation: Testers use modular linear amplifiers and DSP-controlled mainframes to produce accurate, interference-free waveforms across all current levels, ensuring precise harmonic reproduction and reliable relay testing (HVTestPro, CMC 356).

Software Integration: Advanced software platforms, such as Test Universe for the CMC 356 or HVTestPro's automated calibration software, allow simulation of realistic power system events, fault playback, harmonic injection, and automated report generation, supporting both commissioning and maintenance tasks.

DC and AC Outputs: Many testers provide adjustable DC outputs (up to 160VDC) and AC outputs with high current capacity (u...

Article Content

Analysis of the Effects of Harmonics on a Digital

This paper examines the effects of harmonics on operation of a digital distance relay. Because of the need to fully understand and control the

Protection Relay Testing and Commissioning R

FUNCTIONAL TESTS The functional tests consist of using the adequate inputs to the protection relay under test and measuring the performance to discover if it meets the specification. They are typically

Considerations for Using Harmonic Blocking and Harmonic Restraint ...

Abstract—The terms “harmonic restraint” and “harmonic blocking” are sometimes used interchangeably when talking about transformer differential protection. This paper explores the meanings of these

Harmonic Analysis

Harmonic analysis in power systems involves studying the presence and effects of harmonic components in electrical networks. Harmonic analysis involves measuring the harmonic

Harmonic testing conditions Omicron. | Download Table

Download Table | Harmonic testing conditions Omicron. from publication: Evaluation of Harmonics Impact on Digital Relays | This paper presents the concept of the

Waveform Distortion Effects on Power Protection Relays

Examines the impact of waveform distortion and harmonics on power protection relay performance. Electromechanical vs. digital relays.

Six Phase Relay Protection Tester

Our Six Phase Relay Protection Tester is an advanced and versatile tool designed for thorough testing and calibration of protection relays in complex power systems.

How to Reliably Commission a Sub-Harmonic

A sub-harmonic protection relay protects against sub-harmonic oscillations by measuring the voltages and currents magnitudes of sub

Summer 2026

This test enables early detection of winding deformation, incorrect internal connections, manufacturing defects, or tap-changer issues. However, when

A reliability model for overcurrent relays considering harmonic-related ...

Many researchers have investigated the effects of non-sinusoidal waveforms on the performance of different types of protective relays, and have reported some harmonic-related

Relay Testers | sisco

Protection relay tester can be used to verify various relays and microcomputer protections, and can simulate a variety of complex transient, permanent, and conversion faults for the entire set of tests.

Commissioning a Sub-Harmonic Protection IED Using Advanced Testing

It is important to remark that sub-harmonic protection relays cannot be tested following a simple current because each test and voltage injection, requires a specific combination of fundamental signal as

Harmonics Impact on Protective Relays

Harmonics Impact on Protective Relays This document reviews literature on the effects of harmonics on protective relays. Harmonics from distributed generation

The Relay Testing Handbook: Principles and Practice

The complete handbook combines basic electrical fundamentals, detailed descriptions of protective elements, and generic test plans with examples of real-world applications, enabling you to confidently

How to Make Successful Harmonic Measurements

Accurate measurement of harmonics with the highest fidelity possible requires a high-precision instrument with guaranteed accuracy statements for both

Harmonic Detection and Mitigation for Relay Protection Engineers

Discover effective harmonic detection and mitigation strategies tailored for relay protection engineers in electric power transmission.

Megger RTMS: Testing Harmonics of Transformer Differential Protection ...

This video will demonstrate how to set up for testing harmonic restraint or harmonic blocking of transformer differential protection relays. Other types of protective relays the family of SMRT ...

Protection relay testing and diagnostic solutions

Our relay test and management software (RTMS) has a solution available for any job requirements, exceeding your expectations. With Megger as

Commissioning Process and Acceptance Test of a Sub-harmonic Protection ...

It is important to remark that sub-harmonic protection relays cannot be tested following a simple current and voltage injection either manually or by means of pre-defined relay tester scripts, because each

Protective relay and instrument transformer testing equipment

This powerful test system is designed for primary injection testing of protective relay equipment and circuit breakers. It is also used to test the turns ratio of current transformers and for other applications

The Relay Testing Handbook: Principles and Practice

Restrained-Differential Timing Test Procedure 3-Phase Restrained-Differential Slope Testing 1-Phase Restrained-Differential Slope Testing Harmonic Restraint Testing Tips and Tricks to Overcome

Protective Relay Tester

Select from a number of protective relay tester models that feature varying power levels and complexity. Choose the best solution according to your

Q and A: Protective relay testing

These facilities make it possible to test the harmonic blocking feature of transformer differential protection relays accurately and reliably. Q: Are there any differences between generator

Q and A: Protective relay testing

The relay blocks/restrains the differential operation if the 2nd and 5th harmonic values in the injected waveform are higher than the relay settings. Megger facilitates this test by providing

Types of Protection Relays and Testing procedures

Regular testing and maintenance of protection relays are essential to verify their proper operation, detect faults, and mitigate risks. By conducting

Relay Protection Tester

Our relay protection tester offers comprehensive testing for both optical digital and traditional protective devices. It's ideal for power plants, substations, equipment manufacturers, and institutions needing

(PDF) Evaluation of Harmonics Impact on Digital Relays

This paper outlines work that has been conducted to test of overcurrent relay and to identify the impacts of harmonics on distribution utility

Kingsine: Electrical Test and Measurement Equipment

Our protection testing equipment ensures that protective relays and devices operate correctly, safeguarding electrical systems from faults and minimizing damage

Contact Us

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