

# How to measure the protection action time of relay protection instruments



## Overview

We provide guidance regarding test signals, propose a number of ways to measure and compare relay performance, discuss the issue of type testing, and review requirements for transient simulation and playback tools for testing ultra-high-speed line protective relays. Action time, as an important indicator to measure the response speed of relay protection devices, reflects the duration from the input of fault signals to the output of actions of the protection devices. The setup serves to simulate faults and create transient waveforms. Abnormalities are detected of the protection relay with the help of the following general tests: This basic test determines the time that the relay takes to respond when detecting these faults. Then, set the tester parameters, including the operating voltage, operating current, and the phase angle between voltage and current. We review traditional performance measures, such as transient overreach for distance zone 1, and formalize other measures, such as operating time and dependability. Ensure protection systems operate correctly.

## Article Content

Jul 20, 2025

What are the standard methods used to test Protection Relays?

This basic test determines the time that the relay takes to respond when detecting these faults. It is energized with input signals from current and voltage transformers and the time it takes to ...

Oct 19, 2025

Defining and Measuring the Performance of Line Protective Relays

We provide guidance regarding test signals, propose a number of ways to measure and compare relay performance, discuss the issue of type testing, and review requirements for transient simulation and ...

Mar 04, 2026

Relay Testing and Maintenance | Delgado Relay Protection Reference

Time delay characteristics: The operation time of relays is measured to ensure they can detect and respond to faults within specified time limits. This testing helps in verifying the relay ...

Jul 04, 2025

Laboratory Test Bed for Analyzing Fault-Detection Reaction Times of ...

A laboratory hardware-in-the-loop test bed has been developed with traditional current- and voltage-operated protection relays as well as protection functions operated by sampled values ...

Mar 05, 2026

How to test the action time of relay protection tester

By following the above steps and precautions, the action time of relay protection equipment can be effectively tested to ensure that its performance meets the requirements.

Feb 26, 2026

How to test the operating time with a relay protection ...

The relay protection tester simulates fault signals for input, triggering the action of the device under test and synchronously recording the output time of the action signal.

Nov 28, 2025

## Protection relay testing and diagnostic solutions

Megger's smart relay testing solutions and expert support help you validate protection performance, improve system reliability, and ensure continuity of power across your network.

Jul 06, 2025

## Richon Relay Protection Calibrator

The Richon Relay Protection Calibrator is a next-generation calibration instrument designed for precision testing and verification of various protection relays.

Mar 09, 2026

## Research on the analysis method of power system relay protection ...

The experimental results show that this method can effectively analyze the operation characteristics of power system relay protection, and can accurately check whether the relay ...

Aug 22, 2025

## A New Measure of Operating Speed and Consistency of Digital ...

In the proposed test procedure, relay operating times are measured for various fault scenarios established based on the IEC 60255 standard. The measurement data are processed to calculate ...

## Contact Us

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