

A mho type phase comparator relay guideline using phase comparison technique for a power system

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Abstract

This paper presents a mho distance relay simulation based on the phase comparison technique using a typical electrical power systems analysis software for two cases: when the operation state is close to the static voltage limit and during a dynamic perturbation in the system. The paper evaluates the impedance variations caused by complex voltage values, the mho polarization, and the comparator operating region into the complex plane. In addition, the paper found the information for the dynamic perturbations from the outputs considering a mid-term stability program. The simulation of the mho-phase comparator in the static voltage proximity limit detects unit distance elements with impedance measured close to reach the threshold in the steady-state. Dynamic mho simulations in the complex plane are successfully tested by plotting time phase difference curves on the comparator input signals. Relay programmers can use these curves to analyze other phase comparators applications and the corresponding models in the complex plane.

Keywords: Distance relays, Electric power network analysis, Mid-term stability, Mho phase comparator