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DIGITAL DIRECTIONAL AND NON-DIRECTIONAL OVER CURRENT RELAYS: MODELLING AND PERFORMANCE ANALYSIS

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Abstract:

This paper describes the design of a digital over current relay (directional and non directional) and its performance on MATLAB/SIMULINK. Digital over current relays have advantages over electromechanical relays. Their fast, compact and reliable operation results in minimum outage of power system in case of fault. The paper also describes various data conversion steps involved in a digitization process. The logic based algorithm and developed relay model have been tested under various system dynamics and fault conditions. A 400V industrial distribution power system is used as a tutorial to simulate and test the performance results of the over-current relays, with motor start up inrush current consideration and backup relay coordination for safe and reliable operation. Similarly, a 132kV loop network is used as another tutorial example to simulate and test the directional performance of the over-current relay.

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