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# DIGITAL COMPUTATION OF FAULT LOCATION ON ELECTRIC POWER TRANSMISSION LINES

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**Abstract**

Computation of fault location in power system, more specifically on transmission lines, which run through remote, uninhabited areas, like hilly terrains, etc., has been an exigency for long, for quick restoration of power to affected consumers. In these areas it is highly imperative to estimate fault location, not only to improve reliability, efficiency and profits of the power system, but also to avoid trials and tribulations involved in exploring faulty domains through manual and other non-automated means and methods. The fundamental features of the digital computation of fault location include the detection of different fault conditions/types and the use of mathematical expressions for fault location derived using the most versatile method of symmetrical components. The method takes into its fold the four most feasible shunt type of faults, viz. three-phase-shortcircuit, line-to-line, single-line-to-ground and double-line-to-ground. These expressions are solved using a computer algorithm (digital computer) utilizing the line data available as output from the event analysis and fault analysis software of the digital fault recorder. In this method, the apparent impedance concept is used as a potential candidate to compute the fault location.

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**Keywords:** Fault location, power transmission lines, disturbance recorder, symmetrical components, fault analysis, sequence networks, fault calculation, power reliability