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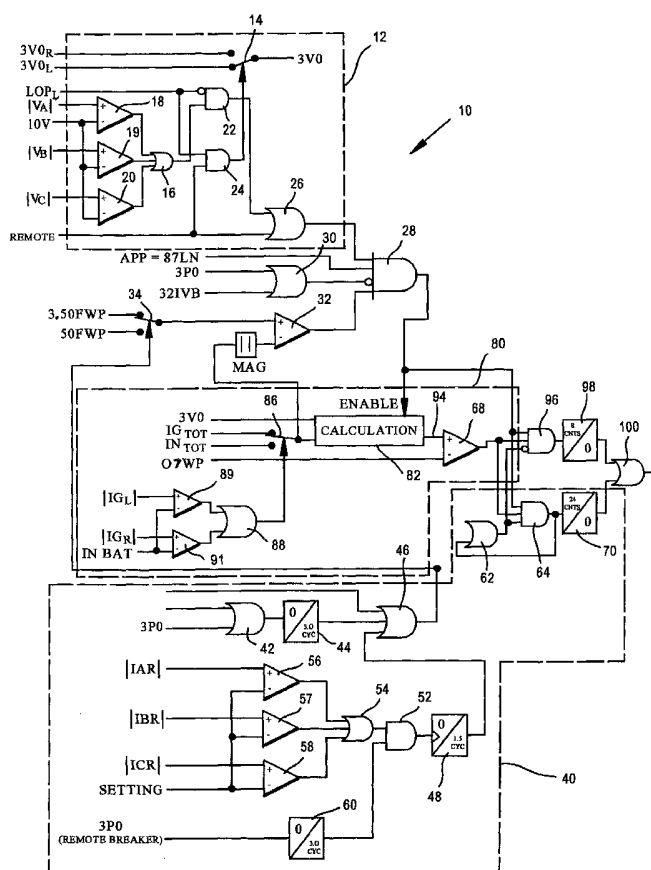
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[Continued on next page]

(54) Title: GROUND FAULT DETECTION SYSTEM FOR UNGROUNDED POWER SYSTEMS



(57) Abstract: The fault detection system (10) includes at least one valid zero sequence voltage source, either from a local relay or a remote relay on a protected line. Zero sequence current is selected between total (vector sum from both ends of the protected line) measured zero sequence current or calculated zero sequence current. A zero sequence impedance-based calculation (80) is then made and the result is compared against a threshold value to produce a trip decision. The trip decision is then applied through a normal tripping circuit or a slow tripping circuit (40), depending upon selected circuit conditions, involving the local and remote ends of the line.

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

Published:

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/24391

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H02H 3/00, 3/18, 3/26, 3/28, 3/42, 7/00, 7/26; G01R 31/08, 31/14
US CL : 361/62-69, 76, 78-83, 86, 87; 324/509, 512, 522; 700/286, 292, 293, 294

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 361/62-69, 76, 78-83, 86, 87

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
NONE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,446,387 A (Eriksson et al.) 29 August 1995 (29.08.1995), See whole document.	1-11
A	US 5,694,281 A (Roberts et al.) 02 December 1997 (02.12.1997), See whole document.	1-11
A,P	US 6,573,726 B1 (Roberts et al.) 03 June 2003 (03.06.2003), See whole document.	1-11
A	US 4,996,624 A (Schweitzer, III) 26 February 1991 (26.02.1991), See whole document.	1-11

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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document member of the same patent family

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