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(54) **FAULT MONITORING METHOD FOR MULTI-PORT INTERNAL PASSIVE LOAD-FREE PROBABILISTIC LOAD FLOW ELECTRIC NETWORK**

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(57) **ABSTRACT**

Disclosed is a fault monitoring method for a multi-port internal passive load-free probabilistic load flow (PLF) electric network. Current transformers are installed on the conductors. Currents from the current transformers are transformed into voltages, and the voltages are then converted into pulses by a voltage-to-frequency conversion (VFC) circuit. The pulses are transmitted via optical fiber to a comparison module, and an algebraic sum of all pulse counts is calculated. It is stipulated that when an installation direction of the current transformer is the same as a direction of the port pointing to the PLF electric network, the pulse count is positive, and when the installation direction of the current transformer is opposite to the direction of the port pointing to the PLF electric network, the pulse count is negative. When the algebraic sum exceeds a threshold, it is determined that a fault has occurred within the PLF electric network. This method is designed for an electric network where the direction of power transmission is uncertain, and can promptly and accurately detect whether faults such as single-phase grounding and interphase short-circuiting have occurred within the electric network. The method achieves advantages such as fast fault response, and precise and timely detection.