



INDEPENDENT POWER TRANSMISSION OPERATOR S.A.
NTPD/ SPECIFICATIONS & EQUIPMENT SECTOR S/S - EHV S/S

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SPECIFICATION SS-104
EARTH FAULT DETECTING RELAY
FOR A D.C.. UNGROUNDED NETWORK

1. SCOPE

This specification covers the requirements concerning the general and operating characteristics of a relay used for detecting earth faults in a D.C. ungrounded network. The network is composed of main and auxiliary protective relays, fed from the batteries of a step-down Transmission Substation.

2. GENERAL REQUIREMENTS

- 2.1. Design : The relay shall be of the static or inductive type or a combination of both. The relay shall be enclosed in a single case suitable for panel surface mounting front connected.
- 2.2. D.C. auxiliary supply : The relay shall be connected to the available from the Substation D.C. supply Voltage $110 \pm 10\%$ or $220 \pm 10\%$ (as specified in the inquiry).

3. MODE OF OPERATION

- 3.1. The relay shall operate on the bridge principle and its circuitry shall, basically, be composed of a D.C. ground detector relay, moving coil type, connected in the place of the galvanometer of the bridge. The moving coil shall have three possible positions i.e. one under normal conditions and two when disturbance occurs. The sensitivity shall be adjustable from 1mA to 10mA. The relay shall close, respectively each one of a normally open contact, which shall operate an alarm relay.
- 3.2. The relay shall comprise the necessary resistances (fixed and adjustable) forming the bridge branches, while the other two shall be formed by the insulation resistances of the positive and negative branches of the D.C. network; two capacitors connected in parallel to each of the first two bridge branches shall be provided in order to suppress all the switching disturbances of the network.
- 3.3. The operation of this system is based on the measurement of the ratio of the two insulation resistances (of the positive and negative branch circuits) by means of the unbalanced current of the bridge, circulating through the ground detector relay.

4. TESTS

Tests shall be made in accordance with the Manufacturer's Country Standard Regulations applying to such relays. Existing certificates and/or test reports shall be accepted provided that they found to be satisfactory. These certificates and/or test reports should be submitted with the Bidder's offer.

5. DATA TO BE SUPPLIED BY THE BIDDER

Bidders are requested to submit attached to their offers, outline drawings of the relay, as well as any information, circuit diagrams and data necessary for a complete description of the relay offered by them.