Claims

1. A grounded socket (10) for insulation fault location in an ungrounded power supply system (2) including insulation monitoring by a standard insulation monitoring device (4) superimposing a measuring voltage (U_m) on the ungrounded power supply system (2) for determining an insulation resistance (R_f) of the ungrounded power supply system (2),
the grounded socket (10) comprising
a housing (16) having electrical contacts (17),
a signaling device (14) for signaling an insulation state, and
a current measuring device (12) for detecting and evaluating a differential current (I_d, I_{dm}, I_{df}), the current measuring device (12) having a measuring current transformer (20) and evaluating electronics (22),
characterized in that
the current measuring device (12) is configured for high-resolution detection and evaluation of a measuring current (I_m) driven by the measuring voltage (U_m) as a differential measuring current (I_d, I_{dm}) and the current measuring device (12) is configured to detect and evaluate a fault current (I_f) flowing at a network frequency of the ungrounded power supply system (2) as a differential fault current (I_d, I_{df}).

2. The grounded socket (10) for insulation fault location according to claim 1,
characterized in that
the current measuring device (12) is AC/DC-sensitive.

3. The grounded socket (10) for insulation fault location according to claim 1 or 2,
characterized in that
the current measuring device (12) has a test loop (15) routed through

the measuring current transformer (20) for generating a test current (I_t).

4. The grounded socket (10) for insulation fault location according to any one of claims 1 to 3,
characterized in that
the evaluating electronics (22) are configured to assess the differential measuring current curve (I_{dm}) in order to establish synchronous insulation fault signaling between the insulation monitoring device (4) and the grounded socket (10).

5. The grounded socket (10) for insulation fault location according to any one of claims 1 to 4,
characterized by being realized as a permanently installed socket (32), as an adapter plug (34) or as a mobile line coupler (36).

6. A method for insulation fault location in an ungrounded power supply system (2) including insulation monitoring by a standard insulation monitoring device (4) superimposing a measuring voltage (U_m) on the ungrounded power supply system (2) for determining an insulation resistance (R_f) of the ungrounded power supply system (2), the method comprising the method steps to be executed in a grounded socket according to any one of claims 1 to 6 of the invention:
detecting and evaluating a differential current (I_d, I_{dm}, I_{df}) by means of a current measuring device (12) having a measuring current transformer (20) and evaluating electronics (22),
signaling an insulation state by means of a signaling device (14),
characterized in that
a measuring current (I_m) driven by the measuring voltage (U_m) is detected and evaluated as a differential measuring current (I_d, I_{dm}) in high resolution by means of the current measuring device (12) and a fault current (I_f) flowing at a network frequency of the ungrounded

power supply system (2) is detected and evaluated as a differential fault current (I_d, I_{df}) by means of the current measuring device (12).

7. The method for insulation fault location according to claim 6, characterized in that
the detection and evaluation by means of the current measuring device (12) is AC/DC-sensitive.

8. The method for insulation fault location according to claim 6 or 7, characterized by the step of
generating a test current (I_t) which is routed through the measuring current transformer (20) of the current measuring device (12) by means of a test loop (15).

9. The method for insulation fault location according to any one of claims 6 to 8,
characterized by the step of
assessing the differential measuring current curve (I_{dm}) by means of the evaluating electronics in order to synchronize insulation fault signaling between the insulation monitoring device (4) and the grounded socket (10).

10. The method for insulation fault location according to claim 9, characterized in that
the differential measuring current curve (I_{dm}) is assessed by detecting a change in amplitude of the differential measuring current (I_{dm}).

11. The method for insulation fault location according to claim 9 or 10, characterized in that
the differential measuring current curve (I_{dm}) is assessed by detecting a change in pattern (M_1, M_2) of the differential measuring current (I_{dm}).