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 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}).~~

~~3.~~2. The grounded socket (10) for insulation fault location according to claim 1 ~~or 2~~,
characterized in that
the current measuring device (12) is AC/DC-sensitive.

~~4.~~3. The grounded socket (10) for insulation fault location according to ~~any one of claims 1 to 3~~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).

~~5.~~4. The grounded socket (10) for insulation fault location according to any one of claims 1 to ~~4~~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 ~~device for insulation fault location~~grounded socket (10).

~~6.~~5. The grounded socket (10) for insulation fault location according to any one of claims 1 to ~~5~~4,
characterized by being realized as a permanently installed socket (32), as an adapter plug (34) or as a mobile line coupler (36).

~~7.~~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).

~~8. The method for insulation fault location according to claim 7, characterized in that~~
~~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).~~

~~9.~~7. The method for insulation fault location according to claim ~~7~~6 ~~or 8~~,
characterized in that
the detection and evaluation by means of the current measuring device (12) is AC/DC-sensitive.

~~10.~~8. The method for insulation fault location according to ~~any one of claims 7 to 9~~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).

~~11.~~9. The method for insulation fault location according to any one of claims ~~7~~ 6 to ~~10~~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 ~~device for insulation fault location~~grounded socket (10).

~~12.~~10. The method for insulation fault location according to claim ~~11~~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}).

~~13.~~11. The method for insulation fault location according to claim ~~11~~ 9 or ~~12~~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}).