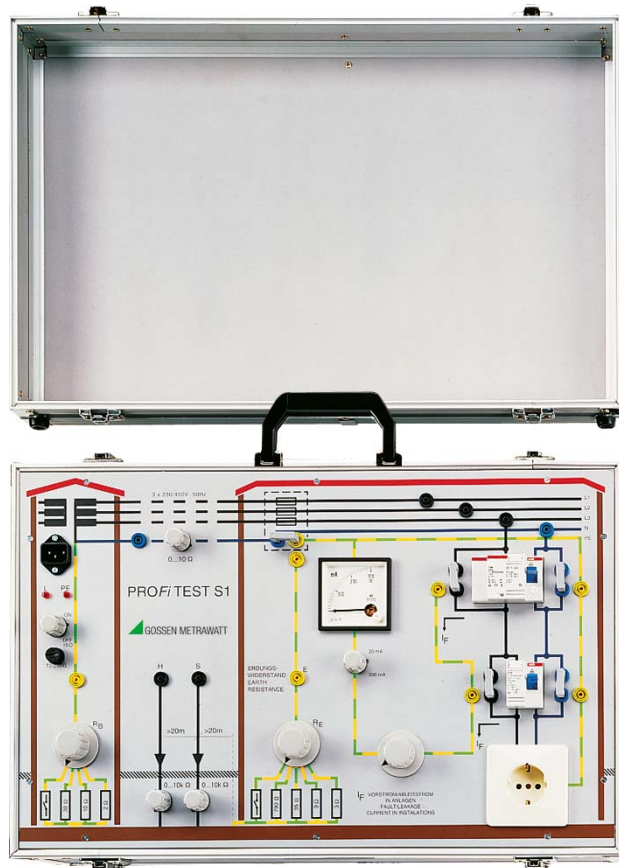


PROFITEST® S1

Network simulator for demonstrating measurements in acc. with DIN VDE 0100

3-348-689-03
3/5.13



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This model is suitable for simulating TT systems and TN systems with overcurrent protective equipment as well as with fault current protective equipment. Systems with overcurrent protective equipment can be equipped with a normal fault current (FI) switch as well as with a selective FI switch.

Thus, in conjunction with the corresponding measuring and test devices, all measurements and tests can be carried out which are required for the safety test of electrical systems up to 500 V with different system configurations and safety measures.

These are, for example:

- Measurements of insulation resistances
- Low-resistance measurements of equipotential bonding conductors
- Measurements for testing fault current protective equipment
- Measurements of the loop impedance
- Measurements of grounding resistances
- Measurements of system voltages
- Measurements of FI release times
- Measurements of FI release current

2 Safety features and safety precautions

The simulation model PROFITEST S1 is constructed and tested in accordance with the safety requirements EN 61010-1 and the EMV conditions EN 61326.

Proper use guarantees the safety of the user and the device.

Read the operating instructions carefully and completely prior to starting your device. Observe and follow them in all respects.

The measuring and testing device must not be used:

- when it is open
- with visible external damage
- with damaged connecting leads and short circuit plugs
- when it is not functioning correctly anymore



Caution!

- The device must only be operated by qualified staff!
- The device must not be opened!
- The device must only be operated with accessories specified for it!



Note

Please also read the operating instructions of the used testers – especially the safety features and safety precautions!

Opening of Equipment / Repair

The equipment may be opened only by authorized service personnel to ensure the safe and correct operation of the equipment and to keep the warranty valid.

Even original spare parts may be installed only by authorized service personnel.

In case the equipment was opened by unauthorized personnel, no warranty regarding personal safety, measurement accuracy, conformity with applicable safety measures or any consequential damage is granted by the manufacturer.

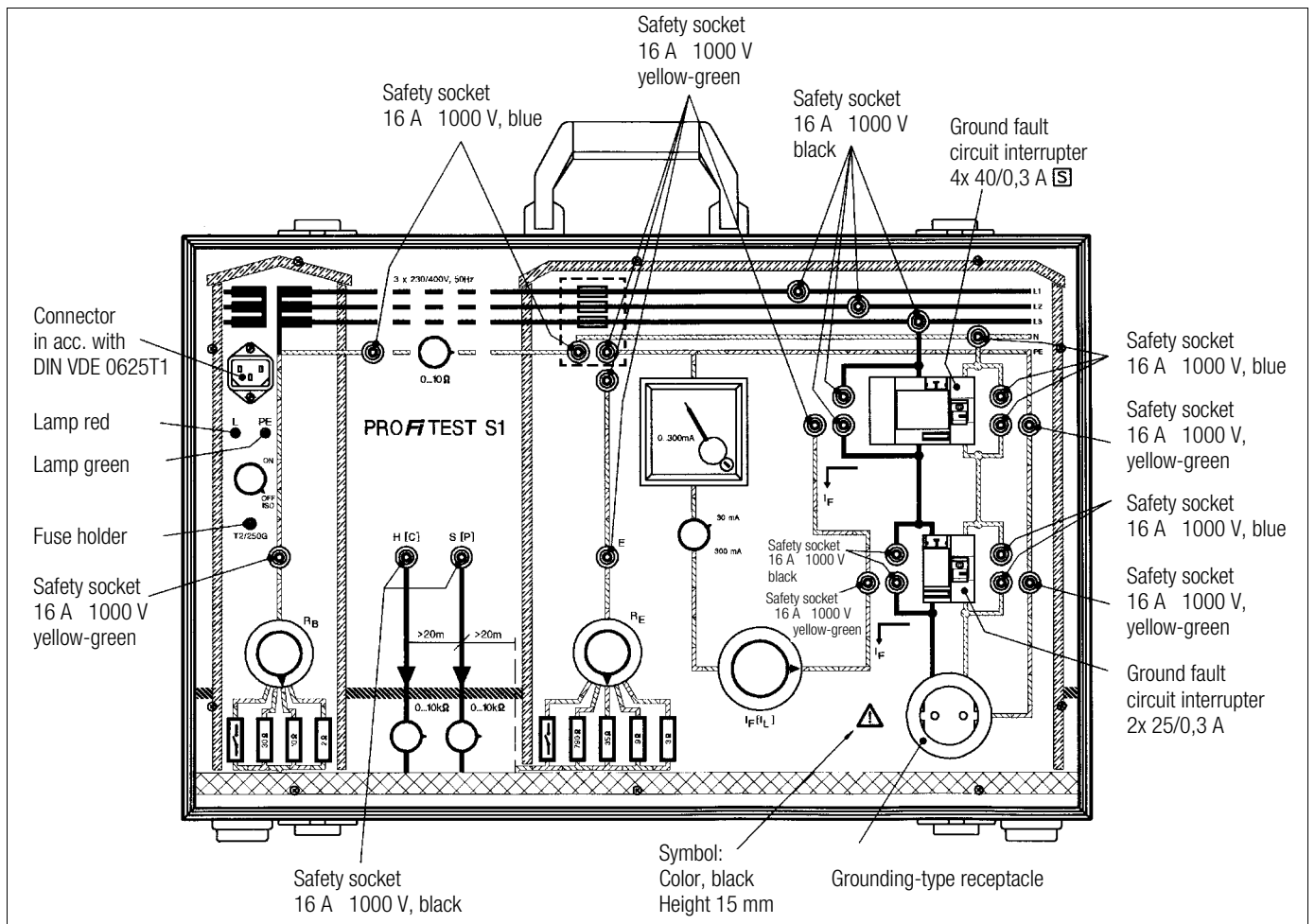


figure 2.0-1 Simulator (test panel) PROFITEST S1

3 Starting

- ⇨ Connect the simulator to a mains receptacle.
The control lamp PE must light.
If this is not the case, the mains connection must be checked.
- ⇨ Switch on the simulator via the mains switch.
Now the control lamp L lights additionally, siehe figure 3.1-1.

Mains switch ON:
Energized demonstration of all safety measure tests is possible.

Mains switch OFF:
De-energized demonstration of all safety measure tests is possible.

3.1 Setting the basic functions

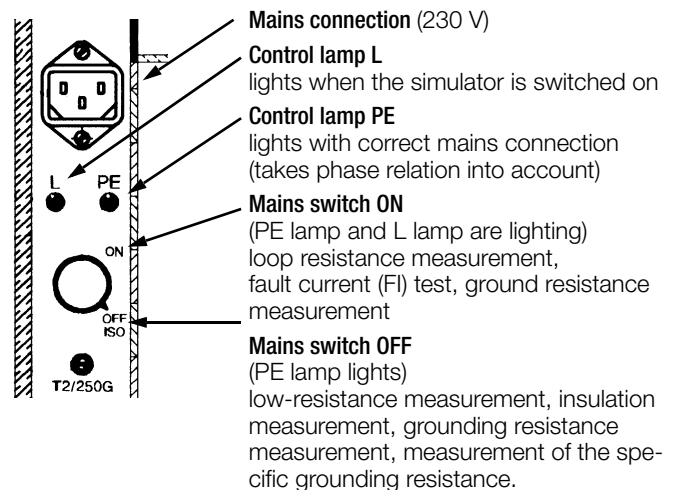


figure 3.1-1

4 Low-resistance measurement

De-energized state of the simulator – only the control lamp PE lights [siehe figure 3.1-1]. This measurement can be demonstrated between the two sockets for low-resistance measurements [figure 4.1-1]. The resistance value can be varied with the controller within the range of 0 ... 10 Ω .

4.1 Measuring the low-resistance connections

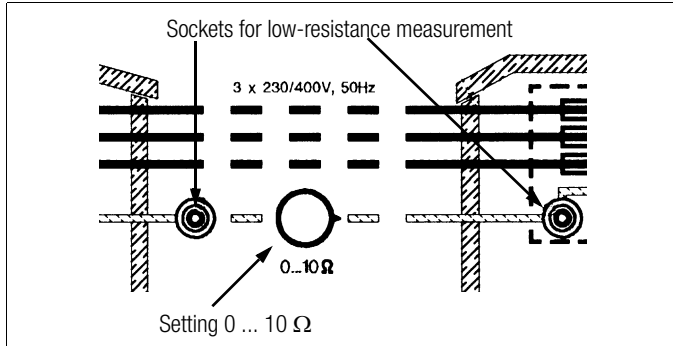


figure 4.1-1

4.2 Connection diagram PROFITEST 0100S-II+

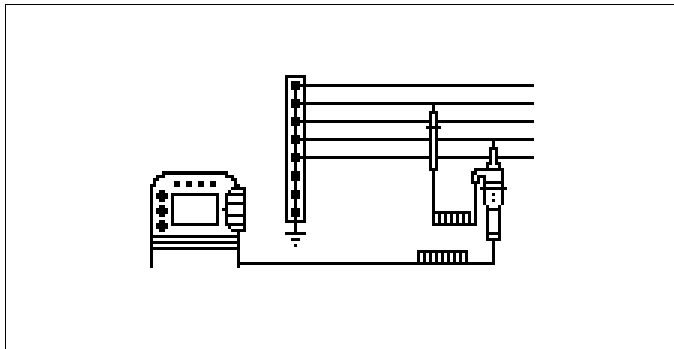


figure 4.2-1

4.3 Connection diagram PROFITEST MASTER

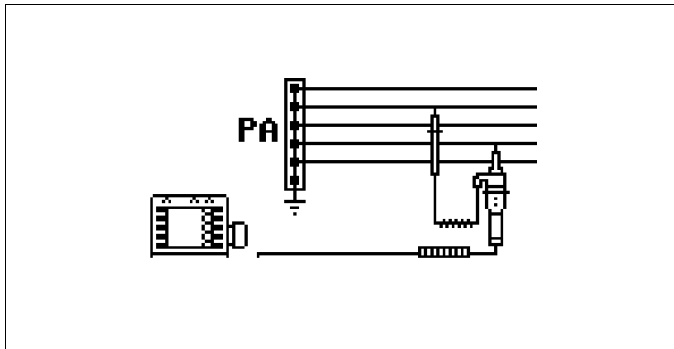


Figure 4.3-1

5 Insulation measurement

De-energized state of the simulator – only the control lamp PE lights, siehe figure 3.1-1. This measurement can be demonstrated between the four sockets [figure 5.1-1] with different values.

In practice, this measurement is carried out between L and PE, siehe figure 5.2-1.

5.1 Measuring the insulation resistances

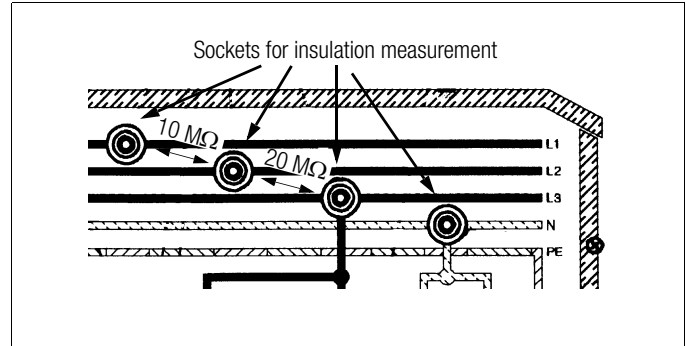


figure 5.1-1

5.2 Connection diagram PROFITEST 0100S-II+

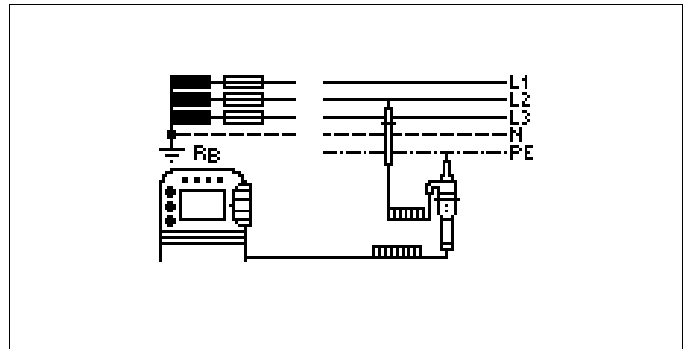


figure 5.2-1

5.3 Connection diagram PROFITEST MASTER

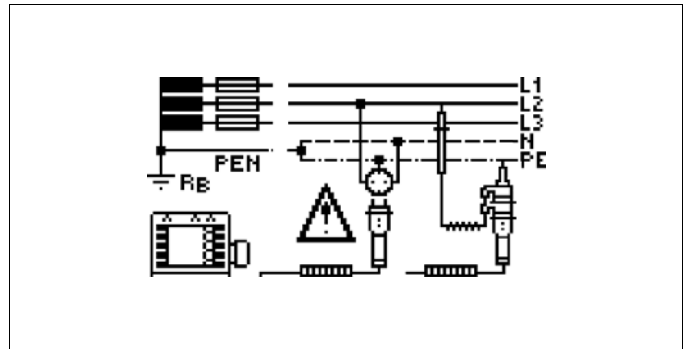


Figure 5.3-1

6 Measuring the loop resistance and the system internal resistance

- ⇨ Switch on the simulator PROFi TEST S1 with the mains switch, siehe figure 3.1-1.
- ⇨ Set the desired system configuration with the short circuit plug (accessory), siehe figure 6.1-1 and figure 6.1-2.

The measurements are preferably carried out in the TN system.

- ⇨ Switch off both fault current switches and bridge them with the short circuit plugs, siehe figure 6.2-1.
- ⇨ Plug the test plugs of the tester into the receptacle and carry out the measurement.

Use the ground contact/secondary emission multiplier adapter (accessory) for measurements with the secondary emission multiplier plug unit. In the TN system, the displayed value can be changed via the setting knob [figure 4.1-1].

6.1 Setting the system configuration

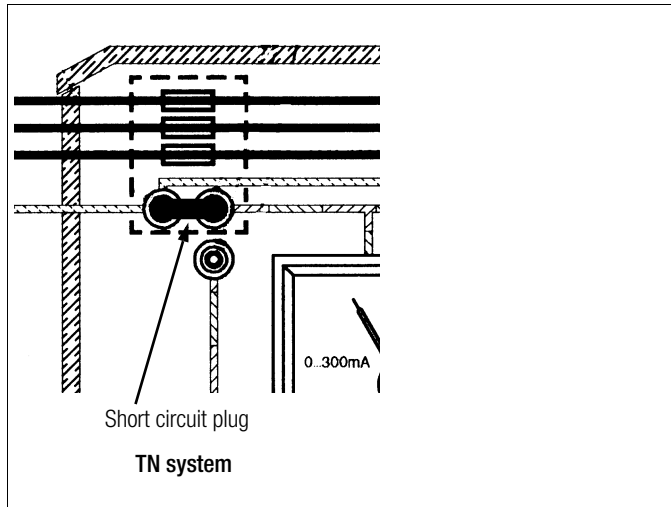


figure 6.1-1

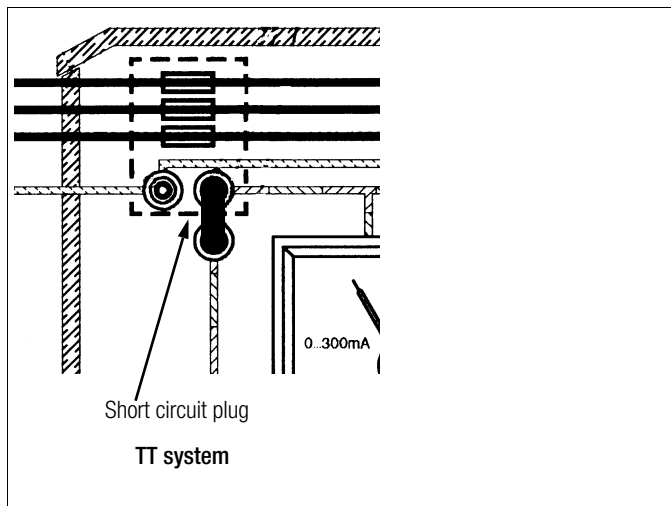


figure 6.1-2

6.2 Setting the protective equipment for measuring the loop resistance and the system internal resistance

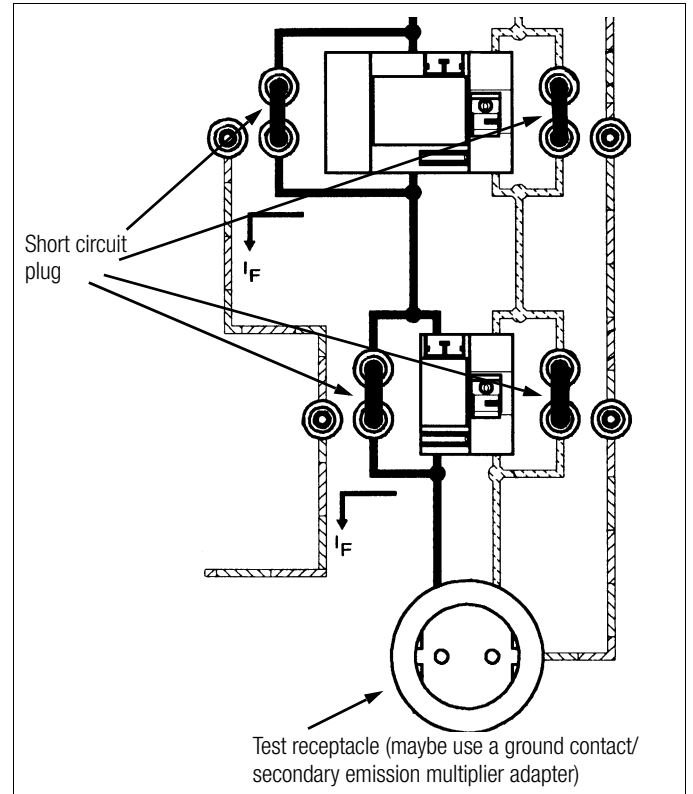


figure 6.2-1

6.3 Connection diagram (ZL-PE) PROFITEST 0100S-II+

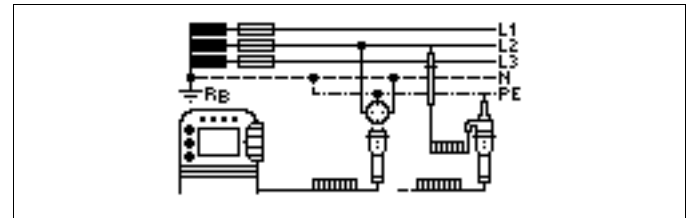


figure 6.3-1

6.4 Connection diagram (ZL-PE) PROFITEST MASTER

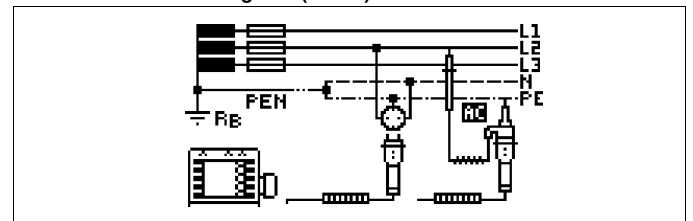


Figure 6.4-1

6.5 Connection diagram (ZI-N) PROFITEST MASTER

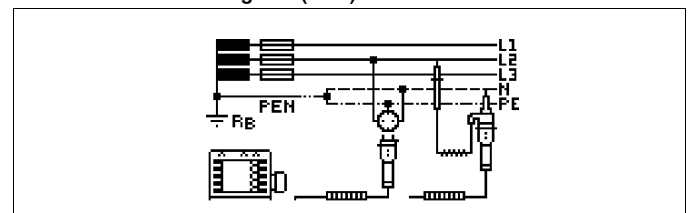


Figure 6.5-1

7 Fault current (FI) test (30 mA/300 mA)

- ⇨ Remove both short circuit plugs at the FI switch to be tested [figure 7.1-1 and figure 7.1-2].
- ⇨ Switch on the FI switch.
- ⇨ Plug the test plug of the tester into the test receptacle and carry out the measurements of the touch voltage, the release time and the release current.

If a bias current is desired, the left short circuit plug at the corresponding FI switch must be attached horizontally to the socket I_F [figure 7.2-1 and figure 7.2-2].

- ⇨ Select the measuring range with the range selector switch 30 mA/300 mA. Set the value in accordance with the fault current display with the controller I_F .

In the TT system [figure 6.1-2], you can connect different grounding resistances with the switches R_B or R_E [figure 8.1-1] for demonstration purposes.

7.1 Setting the protective equipment

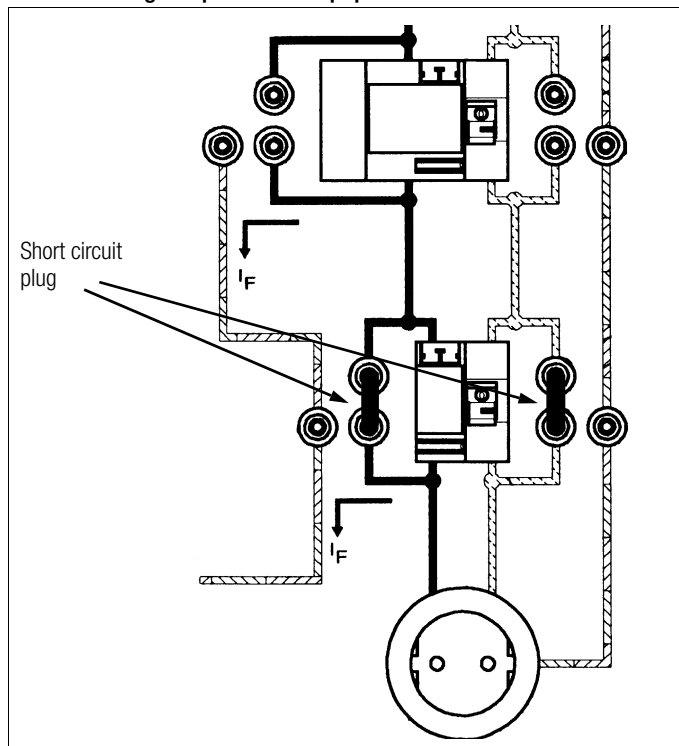


figure 7.1-1 Selective FI switch 300 mA

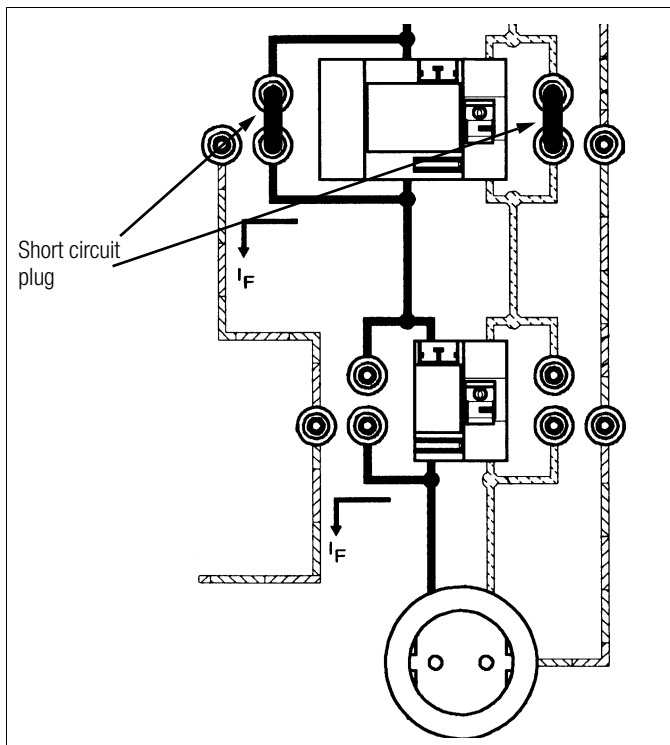


figure 7.1-2 FI switch 30 mA

7.2 Setting a fault current (bias current)

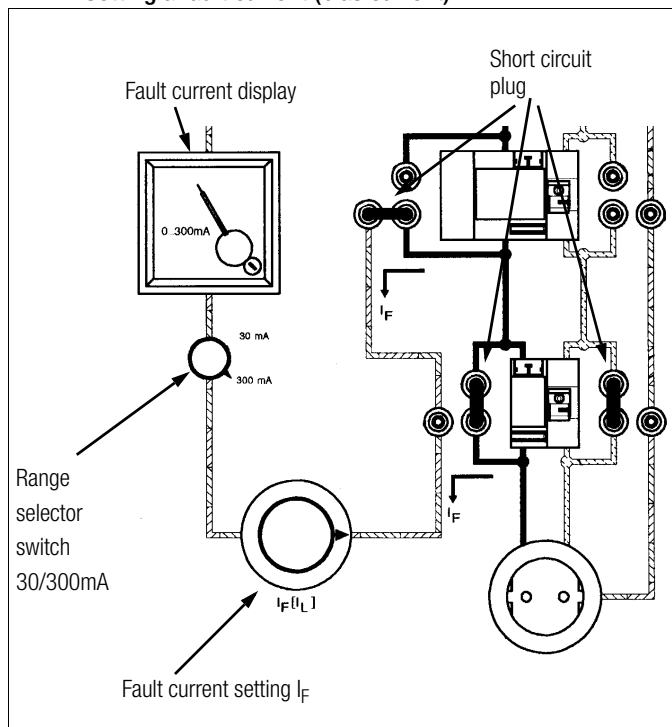


figure 7.2-1 Selective FI switch 300 mA

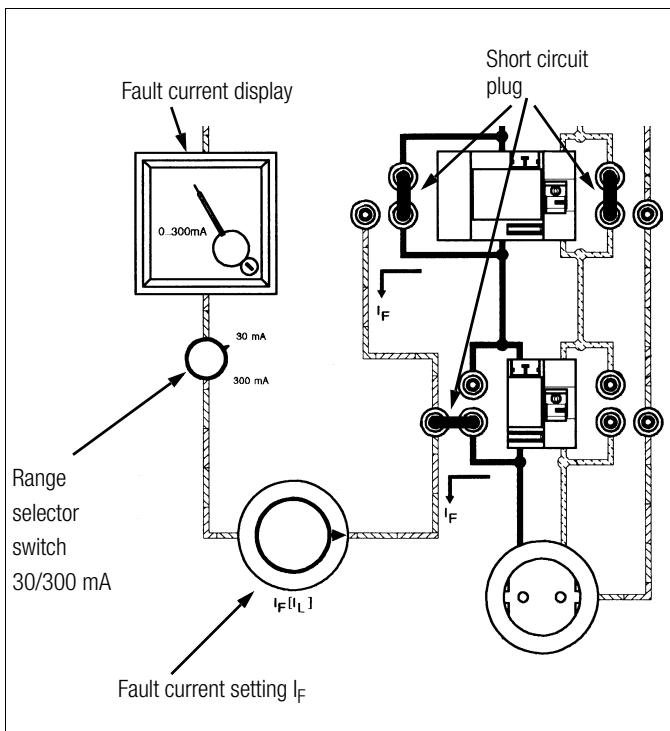


figure 7.2-2FI switch 30 mA

7.3 Connection diagram PROFITEST 0100S-II+

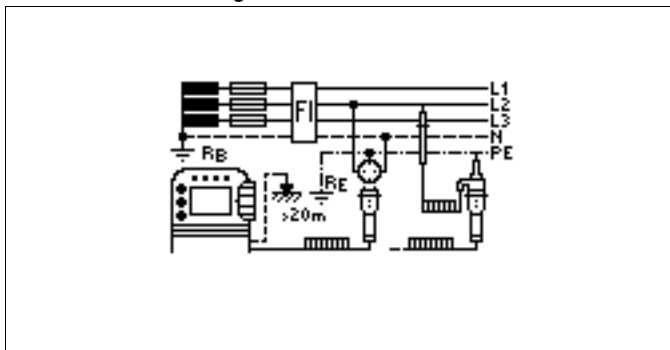


figure 7.3-1

7.4 Connection diagram PROFITEST MASTER

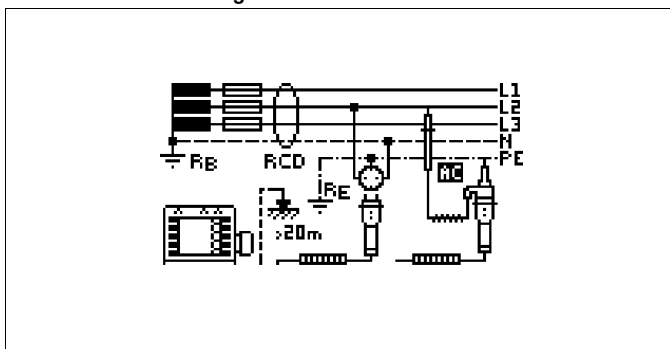


Figure 7.4-1

8 Measuring the grounding resistance and the equivalent grounding resistance

Grounding resistance measurement without probe:

- ⇨ Bridge the FI switches [figure 6.2-1].
- ⇨ Plug the test plug of the tester into the mains receptacle and carry out the measurements.

Grounding resistance measurement with probe:

- ⇨ Bridge the FI switches [figure 6.2-1].
- ⇨ Connect the probe connection of the tester with the socket S(P) [figure 8.1-1].

For demonstrating measurements of the grounding resistance and the specific grounding resistance without system voltage, use the sockets E, H [C] and S [P] [figure 8.1-1]. The simulator must be switched off for the measurement. The influence of the probe resistance and the auxiliary ground electrode can be demonstrated with the adjusters RS and RH [figure 8.1-1].

8.1 Measuring the grounding resistance and the specific grounding resistance

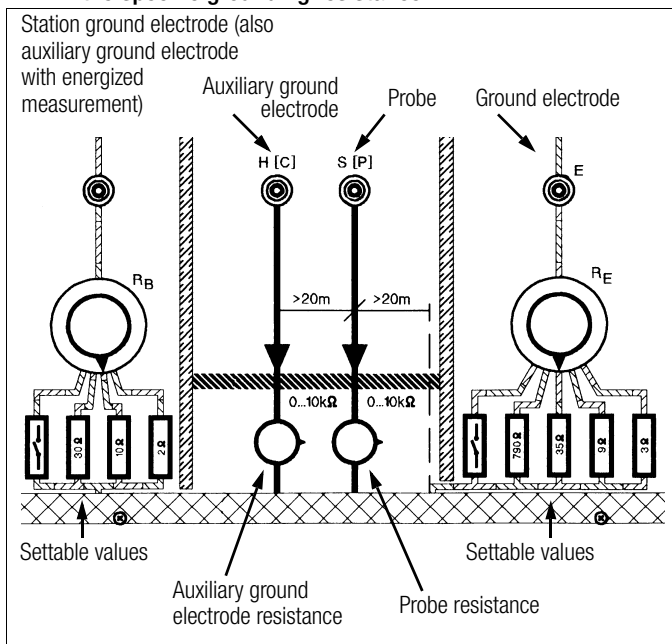


figure 8.1-1

8.2 Connection diagram PROFITEST 0100S-II+

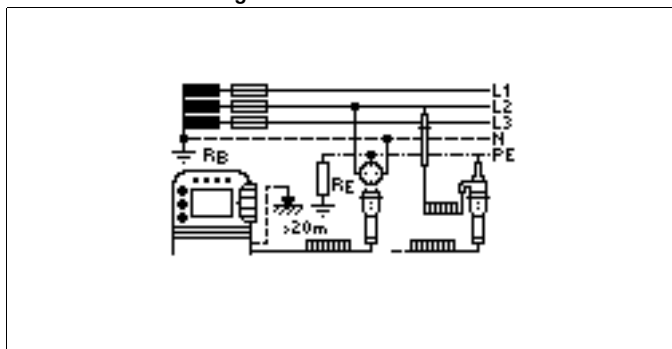


figure 8.2-1

8.3 4-Wire Connection with GEOHM C

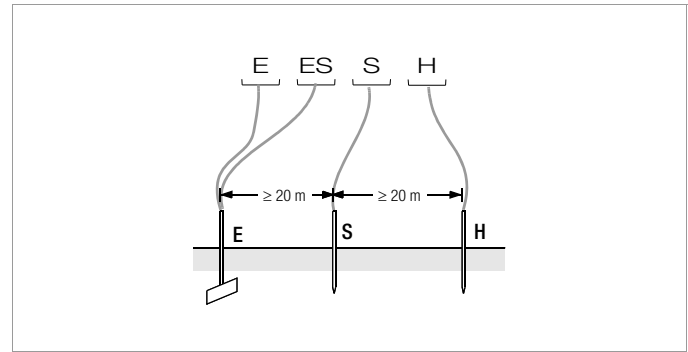


Figure 8.3-1

8.4 Connection diagram GEOHM 5

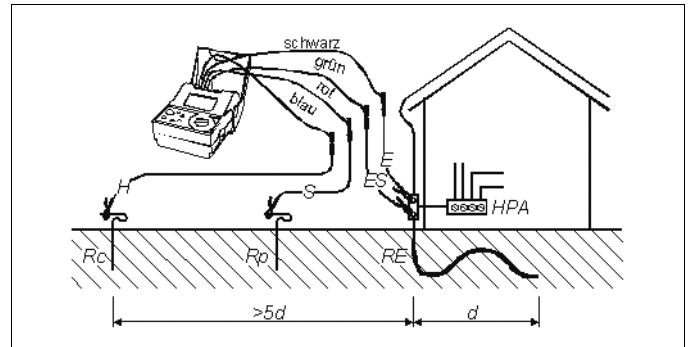


Figure 8.4-1

8.5 Connection diagram PROFITEST MASTER

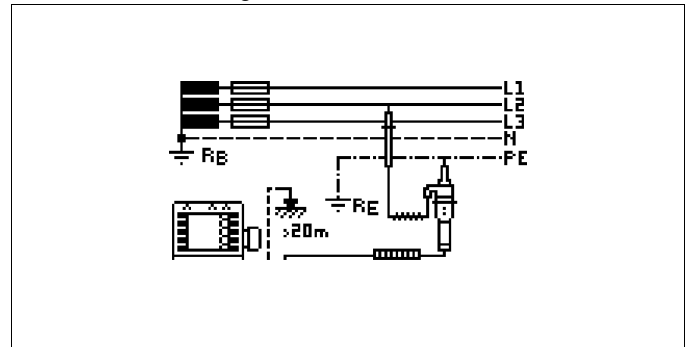


Figure 8.5-1

9 Technical specifications

Measurements

FI switch with settable bias current

30 mA 300 mA S

- Touch voltage without releasing
- Release time with releasing
- Release current with releasing
- Grounding resistance

Loop resistance and system internal resistance for short circuit current determination

TN system 0 ... 10 Ω

TT system 0 ... 10 Ω + 2 / 10 / 30 Ω

Grounding resistance with probe

(Probe resistance and auxiliary ground electrode resistance settable 0 ... 10 Ω)

3 / 9 / 35 / 790 Ω switchable

Insulation resistance

(3 resistance values 10 / 20 / 30 MΩ)

Resistance (low-resistance)

0 ... 10 Ω settable

Temperature range

Operation -0 °C ... 40 °C

Storage temperature -25 °C ... 70 °C

Electrical safety

Mains connection Device with protection class I with electronic reverse voltage protection

Test outputs Shock-hazard-protected 4 mm sockets

Fuse T2 / 250 G

Mechanical construction

Dimensions approx. 600 mm x 400 mm x 180 mm

Weight approx. 13 kg

Carrying case Aluminium frame carrying case

Degree of protection IP 40 in acc. with EN 60529 / VDE 0470 Part 1

Connections IP 20

Power supply

230 V/50 Hz in acc. with IEC 38

Mains cable with 3-pole connector socket and ground contact

10 Maintenance

10.1 Case

Special maintenance of the case is not required. Observe that the surface is clean. Use a slightly moist cloth for cleaning. Do not use detergents and scouring agents.

10.2 Fuse



Caution!

Prior to replacing the fuse, completely disconnect the device from all test leads and/or external current circuits. You must only use the specified fuse!

When using a fuse with other tripping characteristics, other nominal current or other switching capacity, there is danger to the user and also to protective diodes, resistances or other components.

The use of rewired fuses or short-circuiting the fuse holder is not permissible.

11 Repair and Replacement Parts Service, Calibration Center* and Rental Instrument Service

When you need service, please contact:

GMC-I Service GmbH

Service Center

Thomas-Mann-Str. 16-20

90471 Nürnberg • Germany

Phone: +49 911 817718-0

Fax: +49 911 817718-253

E-mail: service@gossenmetrawatt.com

www.gmci-service.com

This address is for Germany only. Abroad, our representatives or establishments are at your disposal.

* **DAkkS Calibration Laboratory for Electrical Quantities D-K-15080-01-01 accredited per DIN EN ISO/IEC 17025**

Accredited measured quantities: direct voltage, direct current values, DC resistance, alternating voltage, alternating current values, AC active power, AC apparent power, DC power, capacitance and frequency

12 Product Support

If required please contact:

GMC-I Messtechnik GmbH

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Phone: +49 911 86 02-0

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