

Electricity with the Modular System

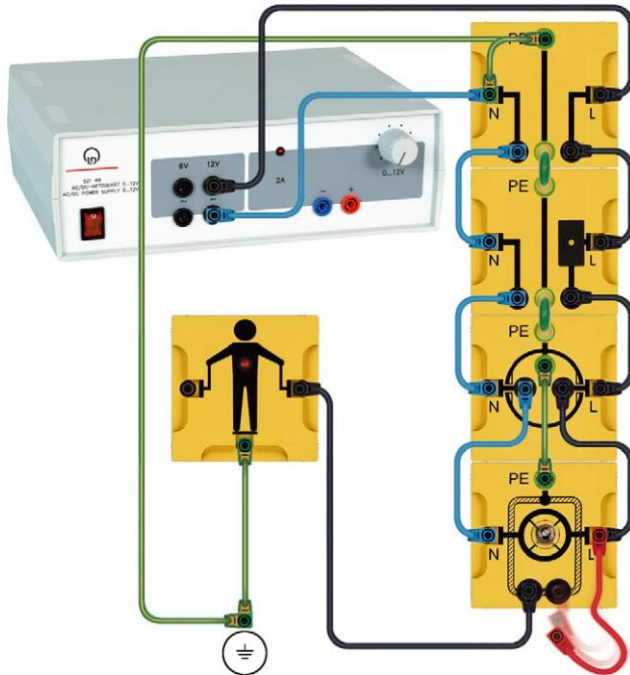
Electrical Safety in the Household
Protective measures

Protective conductor

Objective of the experiment

To demonstrate a protective conductor's mode of operation in the event of a fault to frame.

Setup



Apparatus

1	539 087	Model fuse, BST
1	539 086	Model outlet, BST
1	539 088	Load with housing, BST
1	539 089	Model person, BST
1	539 090	Lead component PE, N, L; BST
1	521 49	Power supply, 12 V, AC
3	500 602	Safety connection lead, 10 cm, blue
3	500 604	Safety connection lead, 10 cm, black
1	500 601	Safety connection lead, 10 cm, red
2	500 600	Safety connection lead, 10 cm, yellow/green
2	500 591	Safety bridging plugs, yellow/green
1	500 622	Safety connection lead, 50 cm, blue
2	500 624	Safety connection lead, 50 cm, black
2	500 640	Safety connection lead, 1 m, yellow/green
Recommended		
1	502 04	Distribution box with earthing socket

Carrying out the experiment

- Switch on the power supply (12 V, AC).
- Produce a fault to frame at the load (connect the phase conductor to the socket at the housing).
- Observe the light emitting diode on both the model person and the fuse.

Observation

The light emitting diode doesn't light up.
The fuse interrupts the circuit.

Evaluation

In electrical equipment with an earthed safety plug, an additional protective conductor is connected to the load housing. When an earthed safety socket is used in the event of a fault to frame, the housing - protective conductor connection closes the protective conductor - phase conductor circuit.

If the cross-sections of phase, protective, and neutral conductors are properly dimensioned, the current is so high that the fuse interrupts the circuit in a fault to frame.

Thus, when touching the housing the person is no longer in danger.