

Electricity with the Modular System

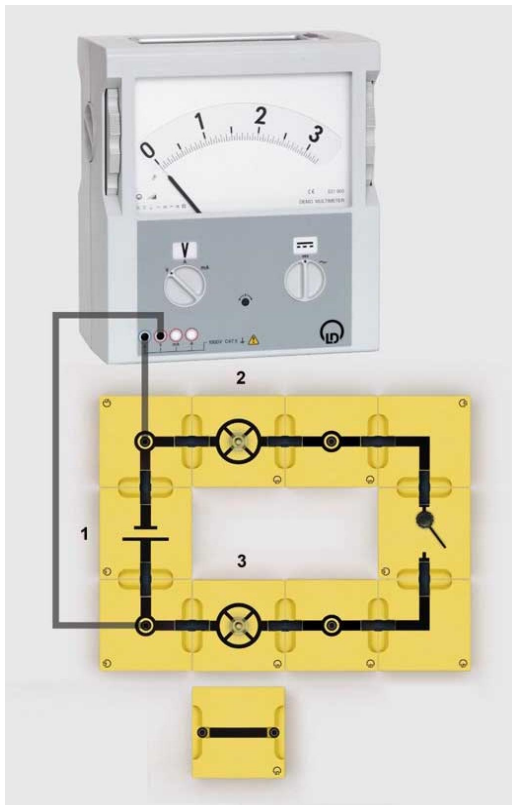
Basic Electric Circuits
Simple circuit

Measuring voltage in a simple circuit

Objective of the experiment

To measure the voltage at different points in a simple circuit.

Setup



Apparatus

1	539 024	Lamp sockets E10, BST
1	from 505 11	Incandescent lamps, 2.5 V / 0.1 A, E10
1	539 025	Toggle switch, BST
2	539 053	Battery element, BST
3	539 001	Connector blocks BST, straight
2	539 002	Connector blocks BST, straight with socket
2	539 004	Connector blocks BST, 90° angle
10	539 005	Connector blocks BST, 90° angle with socket
1	539 000	Bridging plug, BST
2	531 905	Demo multimeter, passive
1	500 644	Safety connection lead, 100 cm
1	301 300	Demonstration experiment frame
	301 301	Adhesive magnetic board

Carrying out the experiment

- Screw the incandescent lamp into the lamp socket and set up the circuit.
- Measure the voltage U at measuring points 1 through 3 with the switch open and closed.
- Replace one of the lamps with the connector block 539 001 and repeat the measurement.

Measuring example

Open switch, two lamps

Measuring point	Voltage U / V
1	3.2
2	0
3	0

Closed switch, two lamps

Measuring point	Voltage U / V
1	3.0
2	1.5
3	1.5

Open switch, one lamp

Measuring point	Voltage U / V
1	3.2
2	0

Closed switch, one lamp

Measuring point	Voltage U / V
1	3.0
2	3.0

Evaluation

The voltage is measured in parallel with the elements of the circuit (e.g. battery and lamp).

The voltage of the battery (voltage source) decreases when the lamps are connected (load).

The sum of the voltages at the lamps in a simple circuit is equal to the voltage of the battery: $U_{L1} + U_{L2} = U_{BATT}$.