

Electronics with the Modular System

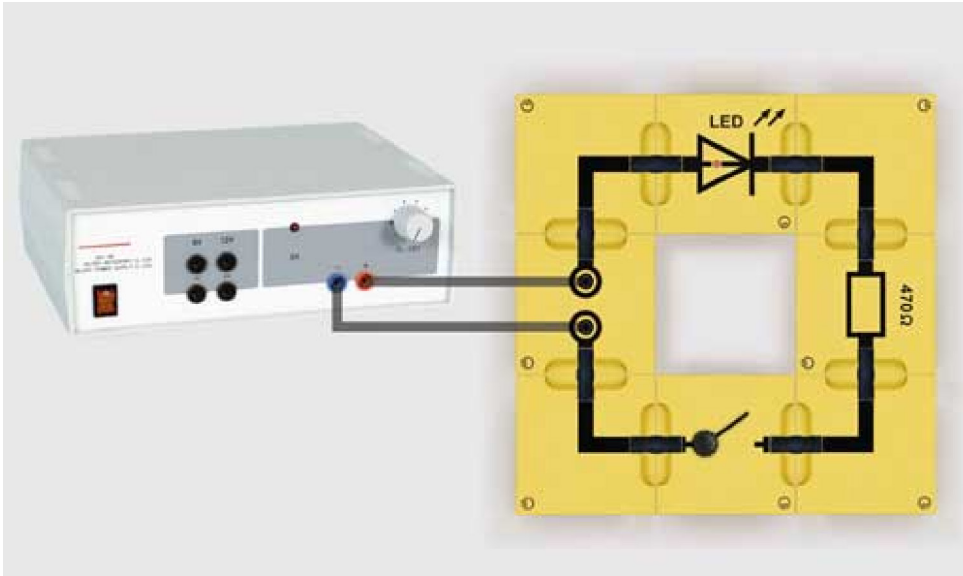
Basic Electronic Circuits
Semiconductor diodes

Light-emitting diode in a DC circuit

Objective of the experiment

To investigate the characteristic of a light-emitting diode in a DC circuit.

Setup



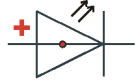
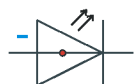
Apparatus

1	539 037	Light-emitting diode, red, BST
1	539 038	Light-emitting diode, green, BST
1	539 010	Resistor 470 Ω, BST
1	539 025	Toggle switch, BST
1	539 003	Connector block BST, straight, 2 sockets
4	539 004	Connector blocks BST, 90° angle
8	539 000	Bridging plug, BST
1	521 49	Power supply, 12 V DC, 230 V
2	500 644	Safety connection lead, 100 cm
1	301 300	Demonstration experiment frame
1	301 301	Adhesive magnetic board

Carrying out the experiment

- Initially, set up the circuit with the red LED and apply a voltage of approx. 6 V.
- Close the toggle switch and observe the light-emitting diode.
- Open the switch again.
- Reverse the voltage and repeat the experiment.
- Replace the red LED with the green LED and repeat the experiment.

Observation

Polarity of the LED	Direction in the circuit	LED lights up
	forward direction	yes
	reverse direction	no

Evaluation

If a light-emitting diode is connected to a circuit in the forward direction, it lights up.

Depending on the semiconductor material and the doping, light-emitting diodes can emit light in different colours (e.g. red or green light).

When a light-emitting diode is polarised in the reverse direction, it emits no light.

As light-emitting diodes glow brightly at a very low current, they are used as signal lamps in technical devices and thereby preferred to standard incandescent bulbs.