

Electronics with the Modular System

Basic Electronic Circuits
Solar cells

Open-circuit voltage
of a solar cell

Objective of the experiment

To measure the open-circuit voltage of an illuminated solar cell.

Setup



Apparatus

1	539 042	Solar cell, BST
2	539 004	Connector blocks BST, 90° angle
2	539 000	Bridging plug, BST
1	531 906	Demo multimeter, passive
2	500 644	Safety connection lead, 100 cm
1	301 300	Demonstration experiment frame
1	301 301	Adhesive magnetic board
additionally required		
1	500 644	Strip of cardboard approx. 5 cm x 10 cm

Carrying out the experiment

- Set up the circuit and initially cover the solar cell with a strip of cardboard. Read the voltage U on the demo multimeter.
- Remove the strip of cardboard, observe the pointer deflection on the multimeter, and read the voltage U_0 .

Observation

When the cover is removed from the solar cell, a voltage U_0 of approx. 0.5 V is detectable.

Evaluation

In a solar cell, light energy is transformed into electrical energy.

The voltage measured at an illuminated, unloaded solar cell is known as the open-circuit voltage U_0 of the solar cell.

Even at low illumination levels, the open-circuit voltage almost reaches maximum value.

For the solar cell used in the experiment, the maximum open-circuit voltage U_0 is approx. 0.5 V.