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leXsolar-PV Large

Order code: **5501.1103**

Cena bez DPH	514,00 Eur
Price with VAT	621,94 Eur

Parameters	
Subject	Photovoltaics
Quantitative unit	ks

Correlating school physics with practical usage of the photovoltaic cells is a specialty of this system. These unique didactic innovations are the premier choice when it comes to experiments related to solar energy since it has won the Worlddidac Award. The system has been conceived in such a way that most experiments can be conducted in normal room lighting. An external power supply is not necessary for these experiments. The leXsolar lighting module (included) is required only for a few experiments - which can be operated with a students power supply.

Experiments:

- 1. Understanding the leXsolar base unit
- 2. Optical illusions
- 2.1 The basic setup for experiments with the color disks
- 2.2 Color qualities
- 2.3 Additive color mixing
- 2.4 Optical illusions with the Benham-disk
- 2.5 Optical illusions with the relief-disk
- 3. Experiments about different kinds of radiation
- 3.1 The influence of diffuse radiation on solar cell power (qualitative)
- 3.2 The influence of direct radiation on solar cell power (qualitative)
- 3.3 The intensity of albedo-radiation of different substances (qualitative)
- 4. Dependence of solar cell power on its area
- 5. Dependence of solar cell power on angle of incidence of light
- 5.1 Dependence of solar cell power on angle of incidence of light (qualitative)
- 5.2 Dependence of solar cell power on angle of incidence of light (quantitative)
- 6. Dependence of solar cell power on illuminance
- 6.1 Dependence of solar cell power on illuminance 1 (qualitative)
- 6.2 Dependence of solar cell power on illuminance 2 (qualitative)
- 6.3 Dependence of solar cell power on illuminance 1 (quantitative)
- 7. Dependence of solar cell power on temperature
- 8. Dependence of solar cell power on frequency of incident light
- 9. The diode character of a solar cell
- 9.1 The dark characteristics of a solar cell
- 9.2 The internal resistance of a solar cell depending on reverse or forward biasing or in the dark or under illumination
- 10. The I-V-characteristics of a solar cell
- 10.1 Dependence of solar cell power on load
- 10.2 The I-V-characteristics and filling factor of a solar cell
- 10.3 Dependence of I-V-characteristics of a solar cell on illuminance
- 11. Behavior of voltage and current in series and parallel connections of solar cells
- 11.1 Behavior of voltage and current in series and parallel connections of solar cells (qualitative)
- 11.2 Behavior of voltage and current in series and parallel connections of solar cells (quantitative)
- 12. Behavior of voltage and current of series and parallel connection of solar cells depending on shading
- 12.1 Behavior of voltage and current of a series connection of solar cells depending on shading (qualitative)
- 12.2 Behavior of voltage and current of a series connection of solar cells depending on shading (quantitative)
- 12.3 Behavior of voltage and current of a parallel connection of solar cells depending on shading (quantitative)
- 13. Simulation of a stand-alone grid with photovoltaic station
- 14. Characteristic graphs of a capacitor
- 14.1 Characteristic graphs of a capacitor charged by a solar cell
- 14.2 Discharging process of a capacitor
- 15. Practical experiments
- 15.1 Determination of efficiency of some energy conversions
- 15.2 Rotational direction and speed of a motor
- 15.3 Starting and running current of a motor

Components:

- 3 x 1100-01 Solar module 0.5 V, 420 mA
- 1 x 1100-02 Solar module 0.5 V, 840 mA
- 1 x 1100-07 Solar module 1.5 V, 280 mA
- 1 x 1100-19 leXsolar-Base unit Large
- 1 x 1100-20 Lighting module
- 1 x 1100-21 Diode module
- 1 x 1100-22 Resistor module
- 1 x 1100-23 Potentiometer module
- 1 x 1100-24 Gear motor module
- 1 x 1100-25 Buzzer module
- 1 x 1100-27 Motor module without gear
- 1 x 1100-28 Color discs - Set 1
- 1 x 1100-29 Solar cell cover set (4 pieces)

- 1 x 1100-30 Color filters
- 1 x 1103-01 Box 1103
- 1 x 1400-07 Capacitor module 220 mF, 2.5V
- 1 x L3-01-004 Vacuum-padding leXsolar-experiment top, black
- 2 x L3-01-005 Vacuum-padding leXsolar-experiment below, black
- 1 x L3-01-013 Lid for tray
- 1 x L3-03-129 Layout diagram PV Large 1103
- 1 x L3-03-258 Info sheet initial startup

Extra needed:

- 1 x 9100-03 AV-Module
- 1 x 9100-05 PowerModule
- 2 x L2-06-012 Test lead black 25 cm
- 2 x L2-06-013 Test lead red 25 cm
- 1 x L2-06-016 Laboratory thermometer

Extra available:

- L3-03-033 Student´s manual leXsolar-PV Large
- 9102 leXsolar-SmartControl Large

Age: 14 - 19 years