

## Photovoltaic-experimental kit for teaching at schools

The available experimental materials allow the carrying out of all basic experiments in the field of photovoltaics.

Because the experiments are built up modularly the adaption to the actual teaching is possible according to the requirement.

The materials are arranged clearly and optically attractive in a specific yellow suitcase. Everything is always completely at hand, extra material is not necessary.

The experiments can be built up and removed fast. The pupils are able to carry out the experiments by themselves with the help of the easily understandable experimentation instruction.

The teacher gets further information to do the exercises and to understand the physics.



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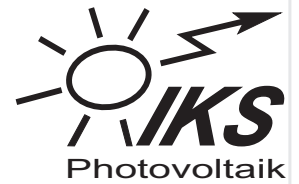
Picture is showing optional extra



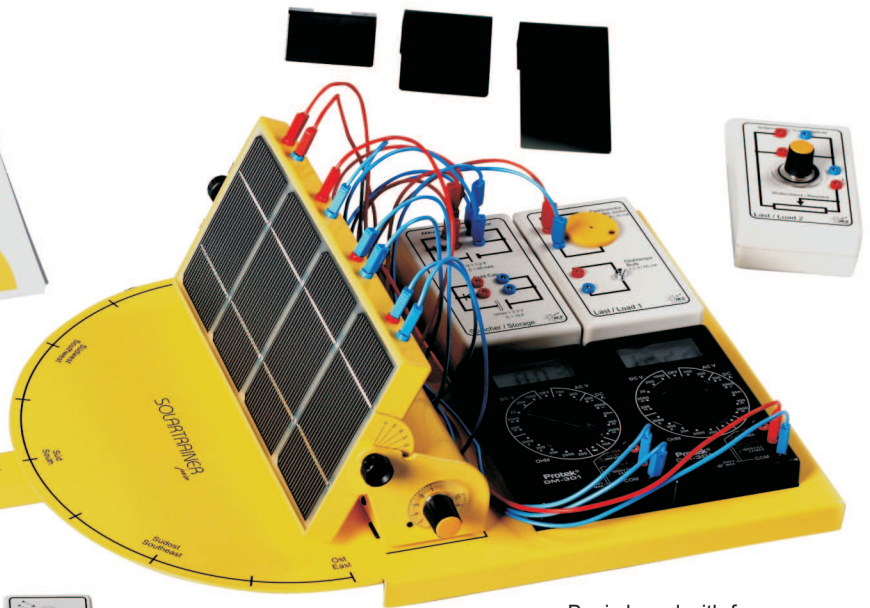
### With the set of equipment supplied, the following experiments are possible:

- Measuring of the irradiance of different light sources
  - Solar cell as an energy converter
  - Solar cell as an energy converter and diode function
  - Open circuit voltage of a solar cell at different shadowing conditions
  - Short circuit current of a solar cell at different shadowing conditions
  - Open circuit voltage and short circuit current of a solar cell at different irradiance
  - Short circuit current of a solar cell depending on angle of incidence of the light
  - Series connection of solar cells / different shadowing conditions / bypass diode
  - Parallel connection of solar cells / different shadowing conditions
  - Characteristic curve of a solar cell (I/U) / different irradiance
  - Characteristic curve of a solar cell (U/P), MPP, figure out of the efficiency
  - Simulation: Short circuit current of a solar cell depending on position of the sun (sunrise to sunset)
  - Charging a GoldCap / accumulator with solar cells
  - Discharging a GoldCap / accumulator with electric motor and light bulb
  - Building up of a stand alone operation net
- With extension kit - measurement with PC:**
- Characteristic curve of a solar cell (I/U) / different irradiance
  - Demonstration of an inverter (sinwave / rectangular)
  - Charging a GoldCap / accumulator with solar cells, discharging a GoldCap / accumulator with electric motor and light bulb

# SOLARTRAINER junior



Dimmable halogen light (low voltage 12 V) which can be moved around the solar module in a semicircle, disconnectable for experiments with sun light



Solar module with 4 single solar cells and angle adjustment. Integrated power supply in the basic housing

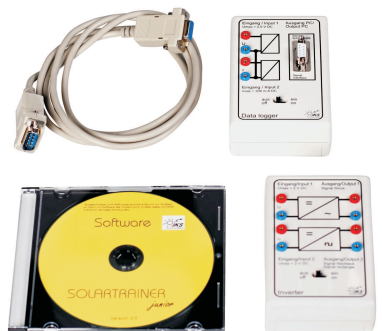
Basic board with frame to put the experimental boxes and multimeters

## Set of equipment supplied:

- Specific yellow suitcase with shaped part made of foam plastic
- Basic board with frame to put the experimental boxes and multimeters
- Low voltage (12 V ) halogen lamp
- Power supply with dimmer switch, power cable (mains fed, input 230 V AC 50 Hz, output 12 V AC)
- Solar module with 4 single cells and angle adjustment
- 2 multimeters with 2 mm connectors
- Sensor box for measuring irradiance
- Load box with electric motor and light bulb
- Storage box with NC accumulator and GoldCap and blocking diode
- Measuring box with variable resistor
- Connecting cords, high flexible, contacts brass / hard copper gold plated
- Experimental instruction / Experimental solutions / Professional informations

## Optional extension kit:

- PC measuring box
- Inverter box
- Interface cable
- RS 232/ USB converter
- Software (running under WINDOWS)



Subjekt to alteration. Pictures additionally are showing partially optional extra. State: 2014-06

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