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**Product Name :**

Solar Smart Grid Professional

**Product Code :**

SLE/PHY/222



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## Description :

Understanding the complex interactions between renewable energies, energy stores and consumers in a smart grid is an important objective in vocational and technical education.

Solar-SmartGrid Professional is the ideal basic training system to reach this goal.

The experiment components for renewable energies such as wind and photovoltaics as well as energy stores such as lithium-iron-phosphate batteries or fuel cells allow a large variety of fundamental experiments besides the smart grid experiments.

With setting-up smart grids on a laboratory scale and its measurement and control students will learn the electro-technical challenges of mains operations very demonstratively.

Pre-set or user-created scenarios let the students gradually develop their knowledge with their own experiments.

The influence of renewable energies on grid stability is one major issue of the product.

The students at first experience the problem within an experiment to develop approaches for increasing grid stability on their own.

At the end they will verify them in practical experiments.

Even such complex concepts as demand-side-management or conductor rope monitoring can be addressed in experiments.

The basis for most of the experiments is the innovative Solar-Smartmeter allowing measurement and control of the energy fluxes in the experiments.

## Smart Grid Experiments :

Daily power fluctuations of a photovoltaic (PV) power plant

Daily power fluctuations of a wind power plant

Energy supply of a building by conventional power plants

Energy supply of a building by conventional and PV power plants

Energy supply of a building by conventional and PV power plants with storage

Grid stability with PV power plants

Grid stability with PV power plants depending on consumer load

Grid stability with PV power plants depending on wire length

Grid stability with PV power plants and smart transformer stations

Grid stability with PV power plants and storages

Grid integration of E-Mobility

Voltage behavior and grid stability in a radial distribution system

Conductor rope management

## Technical Specifications :

### Components :

2x Solar-base unit Professional

2x Smart Meter

1x Solar-Wind turbine module Pro

1x Solar module 5.22 V, 380 mA

1x Wind machine

1x Motor module Pro

1x Base for solar panel

2x Power Module

1x Solar-m

2x Light b

1x MPP-T

2x Grid m

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