Photovoltaics – Teaching system SOLARTRAINER **Profi** for vocational education and training

Basic experimental

Experiment 1.1 Recording the characteristic curve of a diode
(used components: ST 16, ST 18, ST 24, ST 27, ST 99)

Experiment 1.2 Recording the characteristic curve of a diode series connection
(used components: ST 16, ST 18, ST 24, ST 27, ST 99)

Measurements with the solar module

Experiment 2.1 Recording the characteristic curve of a solar module mono-crystalline
(used components: ST 01, ST 14 (with ST 28 mono-crystalline), ST 18, ST 20 RW, ST 24, ST 99)

Experiment 2.2 Recording the characteristic curve of a solar module poly-crystalline
(used components: additionally ST 28 poly-crystalline)

Experiment 2.3 Recording the characteristic curve of a solar modul amorphous
(used components: additionally ST 28 amorphous)

Experiment 2.4 Recording the characteristic curve of a solar module outdoor
(used components: additionally ST 15, ST 22)

Experiment 3.1 Recording the characteristic curves of a solar module with different irradiations, mono-crystalline
(used componets: ST 01, ST 14 (with ST 28 mono-crystalline), ST 18, ST 20 RW, ST 24, ST 99)

Experiment 3.2 Recording the characteristic curves of a solar module with different irradiations, poly-crystalline
(used components: additionally ST 28 poly-crystalline)

Experiment 4.1 The effect of the temperature on the characteristic curve of a solar module, mono-crystalline
(used components: ST 01, ST 14 (with ST 28 mono-crystalline), ST 18, ST 20 RW, ST 24, ST 99)

Experiment 4.2 The effect of the temperature on the characteristic curve of a solar module, poly-crystalline
(used components: additionally ST 28 poly-crystalline)

Experiment 5 The effect of the angle of inclination on the power output of a solar module
(used components: ST 01, ST 14, ST 18, ST 24, ST 99)

Experiment 6 Recording a daily progression for summer and winter
(used components: ST 01, ST 14, ST 18, ST 24, ST 99)

Measurements with simulators

Experiment 7 Series connection of solar modules
(used components: 2 x ST 02, ST 18, ST 20 RW, ST 24, ST 99)

Experiment 8 Parallel connection of solar modules
(used components: 2 x ST 02, ST 18, ST 20 RW, ST 24, ST 99)

Experiment 9 Shading of solar modules without bypass diode
(used components: 2 x ST 02, ST 18, ST 20 RW, ST 24, ST 99)

Experiment 10 Shading of solar modules with bypass diode
(used components: 2 x ST 02, ST 18, ST 20 RW, ST 24, ST 99)

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Measurements in parallel operation

Experiment 11.1 Photovoltaic unit for grid-connected system operation
(used components: 4 x ST 02, ST 03, ST 05 O, ST 07, ST 10, ST 11, ST 18, ST 20 AC, ST 99)

Experiment 11.2 Photovoltaic unit for grid-connected system operation measuring the inverter efficiency
(used components: 4 x ST 02, ST 03, ST 05 O, ST 07, ST 10, (ore ST 11), ST 18, ST 24, ST 99)

Measurements in the off-grid operation

Experiment 12.1 Photovoltaic unit for island-grid system operation direct coupling
(used components: ST 02, ST 18, ST 20 RW, ST 24, ST 99)

Experiment 12.2 Photovoltaic unit for island-grid system operation with DC load
(used components: 4 x ST 02, ST 03, ST 04, ST 08, ST 09, ST 18, ST 20 RW, ST 21, ST 23, ST 99)

Experiment 12.3 Photovoltaic unit for island-grid system operation with AC load
(used components: 4 x ST 02, ST 03, ST 04, ST 06 S, ST 08, ST 09, ST 18, ST 21, ST 24, ST 99)

ST 18 alternativ ST 19.

Due to the modular structure of the SOLARTRAINER Profi other than the tests listed are possible.

Furthermore also general contents are communicable like recording of the voltage drop in the wirings, degree of effectiveness inquiry, Representation and inquiry of faults.