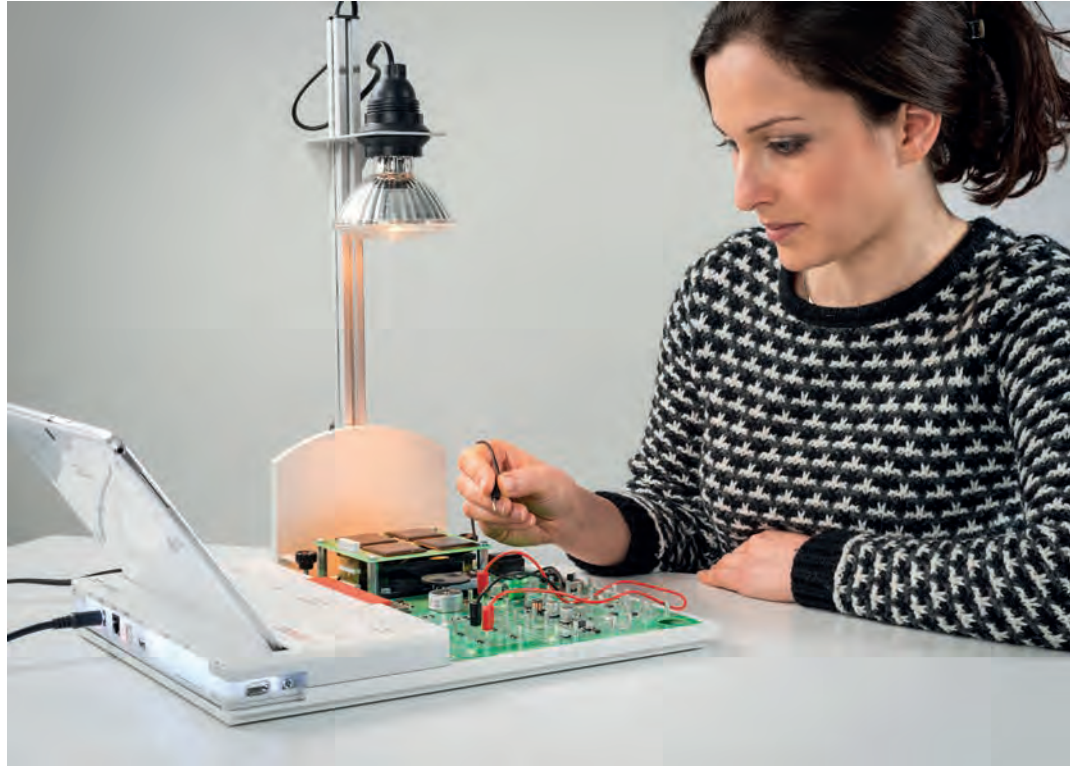
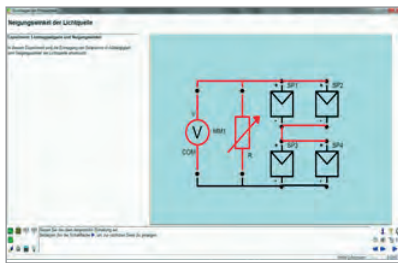


M1.3.1
FUNDAMENTALS

M1.3.1.1
Photovoltaics



Photovoltaics (M1.3.1.1)

Cat. No.	Description	M1.3.1.1
700 5301	COM3LAB course: Photovoltaic	1
700 020	COM3LAB Master Unit	1
700 022	Safety cable 2mm	1
700 00CBTDE	DVD: COM3LAB software, German	
700 00CBTEN	DVD: COM3LAB software, English	1
	700 00CBTXX - The COM3LAB - Software is also available in French, Dutch, Polish, Russian, Spanish, etc.	

Photovoltaics (PV) is the direct conversion of sunlight into electrical energy through solar cells. Solar collectors today are found in industry and in the private sector, and will also play a significant role in the future.

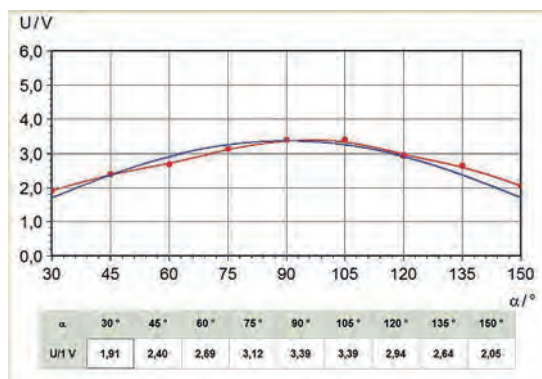
Learning objectives

- Function and application of a solar collector

The COM3LAB Photovoltaics course is a foundation course on using solar cells. It deals with the structure and the function of solar cells. Using several experiments, the function of solar modules in different conditions is examined. With animations and several illustrations, this course gives a clear introduction to the world of photovoltaic systems.

Topics

- Solar cells (features, function, etc.)
- Solar module (features, function, etc.)
- Circuit types of solar modules
- Solar characteristics
- Influence of temperature
- Influence of shades
- Charging circuit
- Solar charge controller
- Photovoltaics system
- Applications



Inclination angle of the light source

COM3LAB course: Photovoltaic

Photovoltaic bases

The COM3LAB course 700 53 photovoltaic treats the structure and the function of solar cells. Animations and illustrations give a descriptive introduction into photovoltaic systems. On basis of real experiments, the course describes the functioning of solar modules. The microcontrolled charge controller pursues the solar generator in the Maximum Power Point (MPP). Theory and experiments are accompanied and checked by the photovoltaic interactive training program.

Topics:

- Solar cell (Properties, function, etc)
- Solar module (Properties, function, etc)
- Different circuits of solar modules
- Solar characteristic
- Influence of temperature
- Influence of shadow
- Charge controller
- Solar charger controller
- Photovoltaic systems
- Applications

Virtual lab:

- Oscilloscope
- Function generator
- Multimeter (2x)
- Digital analyser

Additional functions:

- Word processing
- Printer
- Pocket calculator
- Free experimentation
- Glossary

The experiment board is located in a stable course frame. The Master Unit is pushed onto the course frame and connected to the board. The security lock ensures safe communication.

The experiment board is powered by the Master Unit.

The wiring of the experiments carried out over 2 mm cable.

Course content, experiment instructions and tasks are taught through a course-specific software.

Technical Specifications:

- 1 x Halogen lamp 230 V / 100 W with holder and dimmer
- 4 x Solar cells 4 V / 35 mA
- 1 x Solar charger 2.4 V / 60 mAh
- 1 x Solar controller with microcontroller
- 1 x Solar controller with IC
- 1 x Temperature sensor
- 1 x Fan 12 V
- 1 x Step-up converter
- 1 x Frequency converter
- 2 x Current/Voltage converter
- 1 x Motor
- 1 x LED 12 V
- 2 x Storage capacitors
- 1 x Ohmic load

700 5301	COM3LAB course: Photovoltaic
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Additionally required:

Count	Cat.No	Name
1	700 00CBTEN	DVD: COM3LAB software, English
1	700 020	COM3LAB Master Unit
1	700 022	Safety cable 2mm
1		PC with Windows XP/Vista/7/8

