

PV-KLA

I-V Curve Analyser for Photovoltaics

The I-V curve analyser for photovoltaics PV-KLA can be used on many terms for I-V curve tracing of PV modules and generators in research and industry. Because of its flexibility it can be used for indoor tests as well as for outdoor tests. Several devices are in action at german and international producer sites and research institutes. The PV-KLA is directly and comfortably controlled via the com port of a PC by using the software PVK.



Functional Description

For I-V curve tracing of PV generators the device uses a capacitive load. For a wide range of different PV generators the device uses only one capacitor without the need to exchange hardware. Optimization is done only by software. All 4 channels (voltage, current, irradiance and temperature) are sampled at the same time. The maximal sampling rate for one voltage-current-irradiance-temperature value is 50 (100) kHz.

The portable, battery supplied device is suitable for indoor laboratory tests as well as for portable outdoor test. Large memory for every I-V curve, high accuracy and high sampling rates in combination with irradiance and temperature measurement in standard version enable the device to take curves with high quality. Meteorological sensors are sampled and displayed with 1 Hz. With optional specific adaptors the PV-KLA can be expanded for additional usage.

The PV-KLA complies with the requirements of standard IEC 60904-1 and

can be calibrated by using certified measuring systems.

The meteorological brings several additional channels for the use of meteorological sensors (Pt100 sensors, wind, pyranometer).

The cell adaptor gives the opportunity to measure the I-V curve of single PV cells.

The comfortable control software PVK is programmed in English language and shows in only one measuring window all relevant parameters for the I-V curve, incl. the curve as graphics.

It can be controlled by using the mouse or the keyboard. Long-time measurements with user defined time periods are possible as well as calculation of temperature coefficients for parameters like open-circuit voltage, short-circuit current or power within the maximum-power-point (MPP).

A multiplexer for several PV modules is also available. It is controlled via the PC.



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PV-KLA I-V Curve Analyser for Photovoltaics

Technical Data

- Basic accuracy (16 bit resolution): $\pm 0.1\%$ fsr
Meteorological sensors depend of used sensor type
- Voltage ranges: 25, 50, 100 and 200 V (50 and 100 V with SolarFlare)
- Current ranges: 4, 8, 16 and 32 A
- All current and voltage ranges can be combined to each other
- Irradiance range: 1300 W/m²
- Temperature range: 0 to 100 °C
- Maximal sampling rate for one current-voltage data pair: 100 ksamples/s
- Measuring time for I-V curve: 2 to 500 ms
(about 6 I-V curves per minute possible)
- Maximal measuring quadruples for I-V curve: 4000
- User interface: controlled directly via PC und Software PVK
- Power supply: 5 V grid-plugged power supply or external 5 V battery pack
- PC port: USB 2.0
- Dimensions / weight: 34 cm*30 cm*7 cm (DIN A4) / 4400 g

SI-01TC Silicon Irradiance Sensor

Technical Data

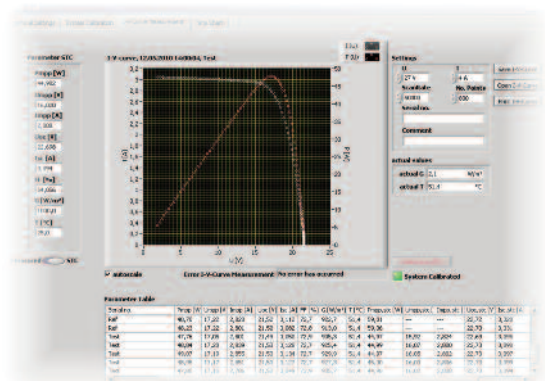
- Silicon irradiance sensor with active temperature compensation
- Calibration value for irradiance: 1 V for 1000 W/m²
- Monocrystalline solar cell, embedded in ethylen-vinyl-acetat (EVA) between glass and Tedlar
- Powder-coated aluminum case

EXTEND OF SUPPLY

Standard version

Complete device PV-KLA with following accessories:

- Serial port (USB 2.0), incl. cable
- Charging unit for charging of batteries
- Silicon irradiance sensor Si-01TCext with active temperature compensation (incl. 2m sensor cable, uv- and heat resistant)
- Pt100 sensor for measurement of module temperature (incl. 2m cable)
- Control software PVK for Windows
- Manual, transportation case, inhouse calibration using DKD-certified components



OPTIONS

- Version for use with flash-light units (SolarFlare), can also be used with steady-state light (natural or artificial)
- Meteorological adaptor for additional meteorological sensors as Pt100 sensors, pyranometer, silicon irradiance sensors, wind sensors, etc.)
- Multiplexing unit for measurement of I-V curves of several PV modules without changing of cabling (also available as a complete test stand)
- Customised software, output masks for data sheets on request
- Different voltage and current ranges on request
- PV-KLA for I-V curve measurement of PV cells (can also be used for module measurement (voltage ranges up to 100 V)
- Zero-Volt option for getting real short-circuit current (start of I-V curve at -0.3 V)
- PV-KLA for measurement of dark I-V curves of PV modules and cells
- PV-KLA for measurement in all four quadrants
- DKD calibration available