

# SOLAR FLARE

## Flashing Light Solar Simulation System for PV Modules

Our flashing light solar simulation system Solar Flare for PV modules combines a flashing unit for the light supply and the I-V curve analyser PV-KLA for measuring the I-V curve of a PV module within one flash. The system is specified as class CCC in basic configuration, but can be upgraded to class ABB (acc. IEC 60904-9).

Because of the modular built-up and high accuracy of the PV-KLA this device can also be used for reference calibration measurements under natural sunlight.



## Functional Description

Our flashing light system Solar Flare was developed for I-V curve measurements of PV modules and is optimised for production tests as well as for teaching students in the laboratory. The high quality of repeatability enables the staff to measure the output power of a PV module with high accuracy by using a reference module of the same type.

During the measurement the irradiance changes and will be corrected within the software compensation.

Together with the measurement of current and voltage in 4-wire-technique also irradiance and temperature are measured together with every point on the I-V curve.

The system exists of a flashing unit, mounted into a case of eloxadised aluminum profiles, shut with eloxadised aluminum sheet metal, which contains the flashing tube and its power supply, as well as the I-V curve analyser PV-KLA.

The PV-KLA is used as a highly accurate measuring system for taking the I-V curve and also controls the power supply for the flashing tube by starting the flash in the right moment. This moment can be triggered directly at the front of the PV-KLA. Also several different capacitor loads can be switched on and off directly at the front plate to optimise number of measuring points and time for taking the complete I-V curve.

Because of the wide range of measuring I-V curves also under natural sunlight, the PV-KLA can be used for making reference calibration modules under the natural sunlight for use together with the SolarFlare.



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## SOLAR FLARE

### Flashing Light System

#### Technical Data

- Flashing tube: Xenon flash, 4800 Ws
- Enlighted area: maximal 2,0 m \* 2,0 m
- Irradiance: maximal 1.200 W/m<sup>2</sup>
- Inhomogenity (basic): ±10 % for 1,6 m \* 1,6 m, ±12 % for 2,0 m \* 2,0 m
- Flash duration: 6 ms with  $|G_{\min, \max} - G_{\text{mittel}}| < 10 \%$
- Spectrum (basic configuration): AM 1.5 class C
- Measuring time: 6 I-V curves per minute
- Repeatability at module measurement: ±0,5 %
- Power supply: 230 V<sub>ac</sub>
- Dimensions (B \* L \* H): 0,6 m \* 1,0 m \* 2,0 m
- Weight: 50 kg

## PV-KLA

### I-V Curve Analyser for Photovoltaics

#### Technical Data

- Basic accuracy: ±0,1 % fsr
- Voltage ranges: 50 and 100 V
- Current ranges: 4, 8, 16 and 32 A
- Maximal sampling rate for one current-voltage data pair: 50 ksamples/s
- Sampling of all channels by using 4 sample and hold devices
- Measuring time for I-V curve: 2 to 8 ms  
(about 6 I-V curves per minute possible)
- User interface: controlled directly via PC and software PVK

## SI-01TXEXT

### Silicon Irradiance Sensor

#### Technical Data

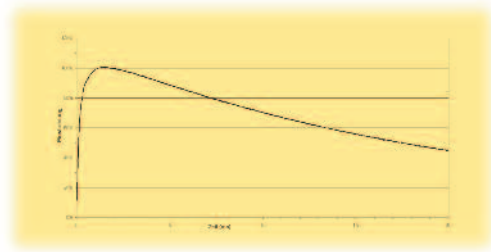
- Silicon irradiance sensor
- Calibration value for irradiance: 1 V per 1000 W/m<sup>2</sup>
- Monocrystalline solar cell, embedded in ethylen-vinyl-acetat (EVA) between glass and Tedlar
- Pulverised aluminium case

## DELIVERY

#### Standard Version

Complete device Solar Flare with PV-KLA with the following accessories:

- Solar Flare housing made of eloxadised aluminium profiles and sheets, special opening
- Power supply for Solar Flare, flashing tube, functionable built up
- PV-KLA with serial USB port, incl. cable
- Power supply for PV-KLA (optional battery supply with charging unit)
- Silicon irradiance sensor Si-01TCext (incl. 2m cable, uv- and temperature resistant)
- Pt100 sensor for measuring module temperature (incl. 2m cable)
- Controlsoftware PVK for Windows™, incl. calibration function
- Manual



## OPTIONS

- Implementation, optimisation and training of personal on request
- Software options, output masks for type and data sheets on request
- Additional current and voltage ranges on request
- Upgrades to spectrum class B or A, local homogeneity of class B
- Other measuring ranges