

# Measuring the Characteristics of Solar Panels

H&H electronic loads of Series PLI can easily acquire V-I characteristics of solar panels. It is particularly advantageous that the electronic loads have a simultaneous measurement of voltage and current. Voltage and current are taken at exactly the same time. If the external zero voltage function is also used, the curves can be recorded down to a few mV. ds have a simultaneous measurement of voltage and current. Voltage and current are taken at exactly the same time. If the external zero voltage function is also used, the curves can be recorded down to a few mV.

## Function

The electronic load is operated in constant voltage mode and starts a increasing ramp beginning at the short circuit and ending at a higher voltage as the unloaded voltage of the panel.

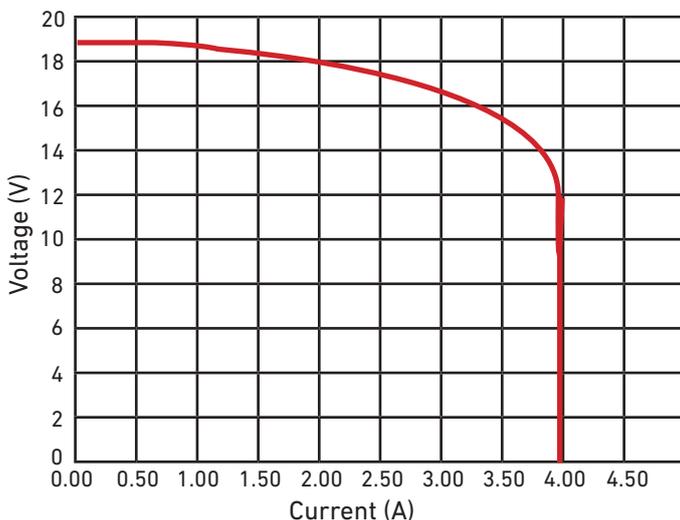
Doing so, the measuring data for voltage and current are recorded and stored in a defined interval.

Afterwards the data are read out and plot in an X-Y diagram (e.g. in MS Excel).

## Programming

The electronic load is programmed in SCPI Syntax. The speed of the ramp and the measuring rate is programmable in a wide range.

Solar Panel 1



## Example

Measurement of the characteristic of a 20 V solar panel with an electronic load PLI606C10. The ramp starts at 0 V and goes to 30 V within 50 ms. The measuring interval is set to 200 µs.

## Commands

```
*RST
FUNC:MODE VOLT
FUNC:SPEED SLOW
VOLT 30
LIST:MODE VOLT
LIST:VOLT 0,30
LIST:VOLT:RTIM 0,0.05
LIST:VOLT:DWEL 0.001,0.001
LIST:VOLT:STR 0.001,0.0002
LIST:VOLT:STDW 0.001,0.001
LIST:COUN 1
INP ON
LIST ON
```

## Polling end of list

LIST?

## Reading measurement data

DATA:POIN? // determining the number of stored data sets  
DATA:REM? x // reading x data sets  
(t1,V1,I1,t2,V2,I2...)