

Solar module SUSE 4.51

5 W solar module for PV experiments

18 solar cells in intern series connection $V_{oc}=11.0$ V, $I_{sc}= 0.59$ A, $P = 5.2$ W with $S = 1000$ W/m², $T = 25^{\circ}$ C, AM 1.5 with integrated indicator LED for operation display



The **solar module SUSE 4.51** is a professional and very robust solar module with 18 solar cells in intern series connection under glass, framed with a stable aluminum frame. On the back of the module an adjustable positioner is mounted, that can be used to adjust the module continuously in an ideal angle towards the solar altitude on the ground or on a table.

A 1.5 m long cable with 2 4mm bunch plugs (red = positive and black = negative) is connected to the module's junction box. On the exterior of the junction box there is a **green glowing indicator LED** to show operational readiness. With this solar module and the experimentation manual extensive experiments about modular technique and solar cells can be conducted. LED modules **SUSE 4.15 (12V)** or the solar vehicle SUSE 4.5 can be connected directly. With the additional module SUSE 4.17 smartphones, tablet PCs, or powerbank rechargeable batteries can be charged with $V = 5.0$ V, furthermore the radio **SUSE 4.36USB** can be connected to **SUSE 4.17**.



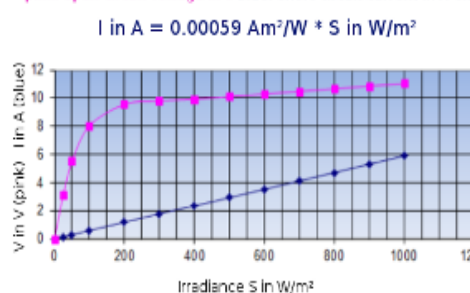
Top:
Solar module SUSE 4.51, the multimeter shows the open circuit voltage 11.04 V.

Left:
The adjustable table/ground positioner on the back of the solar module

Technical data

with STC $S = 1000$ W/m², $T = 25^{\circ}$ C, AM 1.5
Cell type: multicrystalline
Cell dimensions: 52 mm x 31 mm
Cell number: 18
Frame: Aluminum
External dimensions: 240 x 180 mm
Nominal output: 5.2 W
 P_{mpp} : 5.2 W
 V_{oc} : 11.0 V
 I_{sc} : 0.59 A
 V_{mpp} : 9.2 V
 I_{mpp} : 0.56 A
Fill factor: 79.6 %
Cell efficiency factor: 18.0 %
Module efficiency factor: 12%

Characteristic curves $V(S)$ and $I(S)$ Solar module SUSE 4.51
pink: open-circuit voltage in V blue: short-circuit current in A*0.1



The characteristic curves of the module:

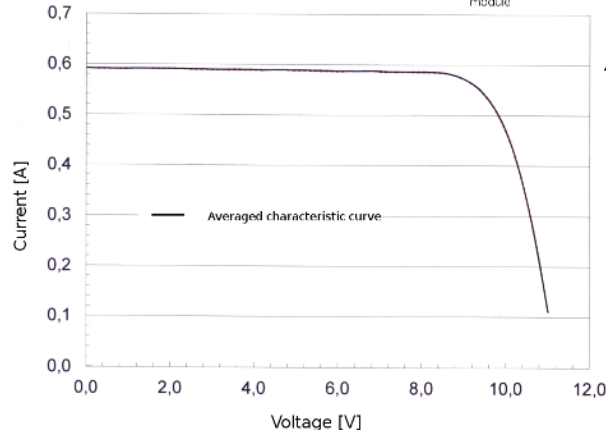
On the left the $V_{oc}(S)$ and $I_{sc}(S)$ curve:

The open-circuit voltage V_{oc} first increases strongly with increasing irradiance S (= light intensity) and then approximates a voltage of 11.0 V.

The short-circuit current I_{sc} increases with the irradiance in a linear fashion up to a maximum value of 0.59 A.

At the bottom the $I(V)$ characteristic curve

I-V characteristic curve, calculated with $G = 1000$ W/m²; $T_{module} = 25^{\circ}$ C



Left: The I-V characteristic curve of the solar modul SUSE 4.51

Bottom: The **green indicator LED** in the junction box shows operational

