

Sovello – SV-T-190/195-fa1

Solar modules are the key element of every solar power system as they convert sunlight into electricity. Their quality, reliability and performance are therefore critical for the yield and profit of your system. Polycrystalline solar modules provide reliable performance based on more than 40 years of use and have a track record of delivering excellent yields.

Phoenix Solar selects the best solar modules from leading international manufacturers based on strict quality criteria. They are tested by our own technical experts as well as independent institutes. This provides you with the investment security whilst optimising your return at the same time.



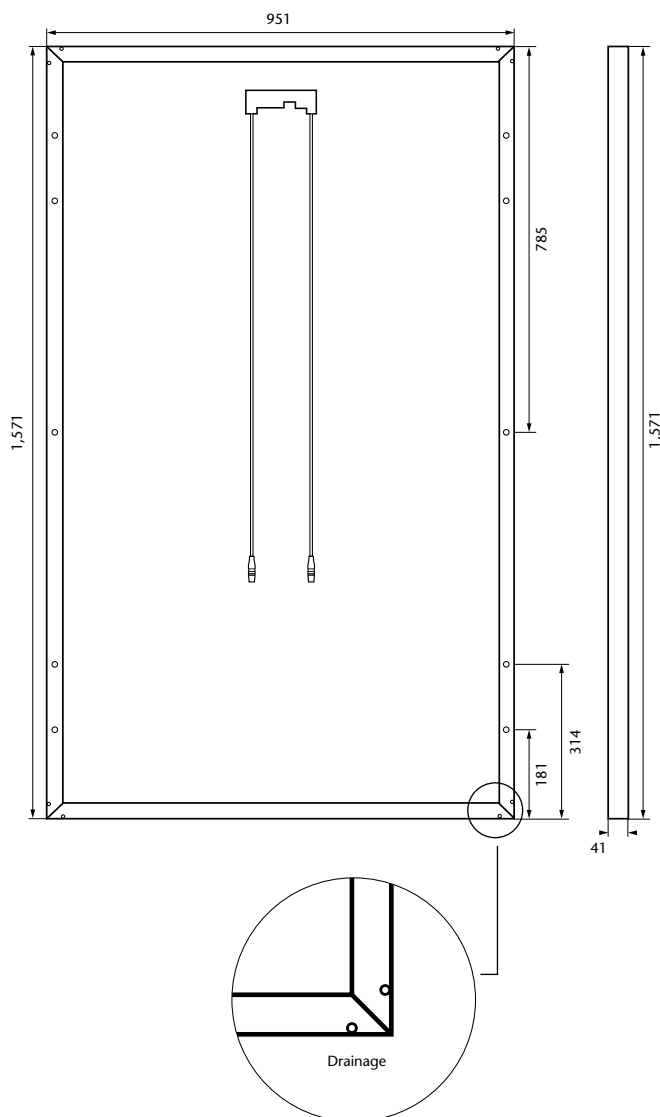
The advantages at a glance:

- 190 and 195 Wp output and particularly narrow output tolerance with at least 100% guaranteed nominal output
- Tested in a RAL certificated process, independent of the manufacturer
- Modules with polycrystalline cells and an efficiency of up to 13.10 %
- Performance guarantee*: 25 years at 80 %, 10 years at 90 % of the minimal rated power output
- Solar glass with anti-reflective coating provides a self-cleaning effect and can increase the yield at inclined light radiation
- The use of STRING RIBBON™ wafers allows very short energy return times
- Quality „Made in Germany“

* The manufacturer's terms and conditions of guarantee apply

Experience that pays

Phoenix Solar or your local Phoenix Solar partner individually match the solar modules and all additional system components to ensure that you get the ideal system to meet your requirements. All of our sales partners have a considerable amount of expertise and many years of experience in solar technology and have been personally chosen by us according to the strictest quality criteria.



Mechanical parameters

Length [mm]	1,571 ± 2.50
Width [mm]	951 ± 2.50
Depth [mm]	41
Depth with connection socket [mm]	41
Weight [kg]	17,40
Connection socket (manufacturer/number of diodes)	Onamba/2
Positive cable (manufacturer/length [mm]/cable cross-section [mm²])	Leonie Studer/1,070/6
Negative cable (manufacturer/length [mm]/cable cross-section [mm²])	Leonie Studer/1,070/6
Plug connector (manufacturer/type)	Multicontact/MC4 compatible
Front cover (material/thickness [mm])	Patterned glass/3.2
Cell type (quantity/technology)	108/polycrystalline
Cell embedding (material)	Ethyl Vinyl Acetate (EVA)
Rear cover (material)	TPE
Frame (material/profile type)	Aluminium/hollow profile

Manufacturer's guarantee

Product guarantee	5-year product guarantee*
Performance guarantee	10 years at 90 % of the minimal rated power output* 25 years at 80 % the minimal rated power output*

* The manufacturer's terms and conditions of guarantee apply

Qualifications and Certificates

IEC 61215, IEC 61730, UL 1703



Sovello is a fully integrated producer (solar wafers, solar cells and solar modules) and was founded in 2005. Currently, they operate three production plants in the so-called Solar Valley in Bitterfeld-Wolfen, Sachsen-Anhalt/Germany. The patented STRING RIBBON™ wafers are a result of a procedure that is balanced both economically and ecologically.

STRING RIBBON™ is a brand of Evergreen Solar Inc. and their manufacturing process is patent-protected in the U.S. and other countries.



Electrical parameters

Electrical parameters for STC (1,000 W/m², T_{Module} = 25 (+/- 2) °C, AM 1.5, according to EN/IEC 60904-1 to 60904-3)

Article number	111051	111050
Power output [P _{mpp}]	190	195
Power output tolerances [%]	+ 2.50	+ 2.50
Efficiency [%]	12.70	13.10
Max. voltage V _{mpp} [V]	17.40	17.60
Max. current I _{mpp} [A]	10.92	11.08
Open circuit voltage V _{oc} [V]	21.50	21.70
Short circuit current I _{sc} [A]	11.95	12.11

Electrical parameters for 800 W/m², T_{Module} = NOCT, AM 1.5, according to EN/IEC 60904-1 to 60904-3
NOCT = Nominal Operating Cell Temperature, cell temperature under nominal operating conditions

Max. power output P _{mpp} [Wp]	138.80	142.50
Max. voltage V _{mpp} [V]	15.90	16.10
Max. current I _{mpp} [A]	8.71	8.83
Open circuit voltage V _{oc} [V]	19.80	20.00
Short circuit current I _{sc} [A]	9.69	9.82

Electrical parameters for 200 W/m², T_{Module} = 25 (+/- 2) °C, AM 1.5, EN/IEC 60904-1 to 60904-3

Max. power output P _{mpp} [Wp]	36.60	37.60
Max. voltage V _{mpp} [V]	16.70	16.90
Max. current I _{mpp} [A]	2.18	2.21
Open circuit voltage V _{oc} [V]	19.80	20.00
Short circuit current I _{sc} [A]	2.41	2.44

Reverse current loading capability I _R [A]	30
Max. permissible system voltage V _{sys} [V]	1,000

Parameters of the thermal characteristics

NOCT [°C]	45.20
Temperature coefficient of the short circuit current I _{sc} [%/K]	0.06
Temperature coefficient of the open circuit voltage V _{oc} [%/K]	- 0.33
Temperature coefficient of the MPP power P _{mpp} [%/K]	- 0.45

Operating conditions

Max. operating temperature [°C]	- 40 to + 80
Max. snow load [Pa]	5,400
Max. wind load [Pa]	5,400

PLANNING GUIDE

The module array displayed below applies specifically to Sovello SV-T-190/195-fa1 modules, including the distances for connecting them together (using the TectoSun 3, Tecto-Sun mounting systems, scale: 1:100).

Notes on use: Draw a scale diagram of the roof (1:100) with all the details (windows, dormer windows, chimneys, etc.) on transparent paper and place it over this module

array. Copy the intersecting points of the grid on the roof diagram and connect them with a line. If the roof diagram is larger than the grid, it can be moved as required. Doing this allows you to determine the maximum allocation of modules while taking shading and objects on the roof into account.

