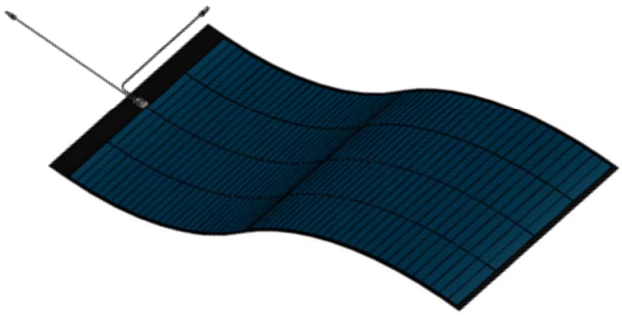
Photonic Universe SELM-500 modules

Solar for bitumen and membrane roofs

Photonic Universe **SELM-500** are ultralight and flexible CIGS solar panels which, among other applications, are intended for roofing felt and membrane roofs as a base, where the end product becomes a discreet solar roof. Photonic Universe **SELM-500** modules are suitable for flat and sloping roofs and follow the shape of the roof, regardless of whether it is flat or curved. No additional mounting is required to angle the panels.

The solar panels are only 1.7 mm thin. They are made of thin film CIGS solar cells and weigh less than 2 kg/m². With such low weight, **SELM-500** is a new alternative for roofs with weight restrictions. This means little to no costs for strengthening the roof structure. Thanks to the low weight, you can also cover more roof space and increase the number of solar panels on your roof – resulting in more solar power.

Photonic Universe **SELM-500** is suitable for installation on commercial properties, industrial buildings, warehouses and sports arenas, but also apartment buildings and private homes.



Flexible solar panels allow installation on curved surfaces and uniquely designed roof structures.

Self-adhesive backing for fast, streamlined installation on roofs.

Minimal weight enables easy and safe installation without penetrating the waterproofing layer of the roof.

Roof access – the solar panels can be carefully walked on during maintenance thanks to their shatterproof and crack-resistant properties.

Highly efficient CIGS cells without toxic cadmium thanks to the unique technological advancements of the production system.

Superior shading performance – bypass diodes between each cell ensure that shading on one or more solar cells only affects the current cells instead of the entire panel.

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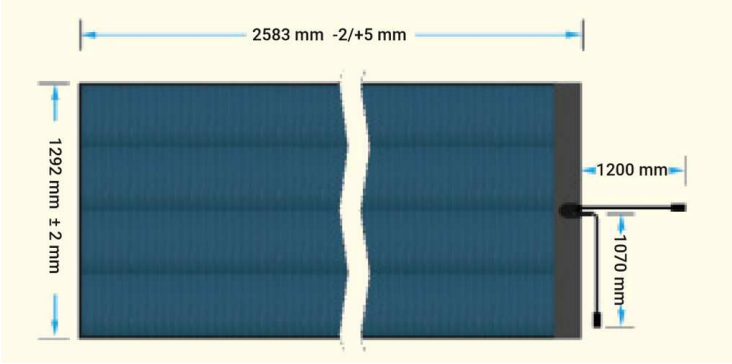
Technical characteristics

SELM-500



Electrically Photonic Universe **SELM-500** solar panels consist of thin film solar cells (CIGS) on ultra-thin stainless steel substrate connected in series. The cells are protected and encapsulated by several film layers to ensure long-term durability. The modules are delivered with IP68 rated junction boxes to endure a robust, weather resistant electrical connection. Photonic Universe **SELM-500** solar panels can be retrofitted to an existing roof or mounted simultaneously with a complete roof replacement, without drilling holes in the roof's waterproofing layer.

PRODUCT INFORMATION	SELM-500	SELM-510
Weight	6.6 kg (2 kg/m²)	6.6 kg (2 kg/m²)
Width	1292 ±2 mm	1292 ±2 mm
Length	2583 (-2/+5) mm	2583 (-2/+5) mm
Max thickness (junction box with adhesive)	17 ±0,5 mm	17 ±0,5 mm
Min thickness (module with adhesive)	2.5 mm	2.5 mm
Roof pitch	min 2°	min 2°
Min bending radius	0.5 m	0.5 m
Cell type thin film	CIGS (Cu (In, Ga) Se2)	CIGS (Cu (In, Ga) Se2)
Product Warranty	10 years	10 years
Power guarantee after 10 years	90%	90%
Power guarantee after 25 years	80%	80%
Certifications	IEC 61215, 61730	IEC 61215, 61730
Fire Safety	Class C	Class C
Colour of the panel	Black	Black

TECHNICAL DATA	SELM-500	SELM-510
Nominal Power, Pmax*	500 W	510 W
Power/m²	150 W/m²	153 W/m²
Power/kg	89 W/kg	91 W/kg
Maximum Power Voltage, Vmpp	60.16 V	60.24 V
Maximum Power Current, Impp	8.31 A	8.47 A
Open Circuit Voltage, Voc*	75.08 V	75.21 V
Short Circuit Current, Isc*	9.32 A	9.42 A
Maximum Series Fuse Rating	25 A	25 A
Maximum System Voltage, VDC	1000 V	1000 V
Protection class against electrical shock	II	II
Design Load**	± 3600 Pa	± 3600 Pa
Module operating range	-40 to +85 °C	-40 to +85 °C
Temperature coefficient, Pmax (W), γ	-0.38 % / °C	-0.38 % / °C
Temperature coefficient, Voc (V), β	-0.28 % / °C	-0.28 % / °C
Temperature coefficient, Isc (A), α	0.008 % / °C	0.008 % / °C

** Testing performed at STC (Standard test conditions): solar radiation of 1000 W/m2 with perpendicular incidence towards the module surface, module temperature 25°C, Air mass 1.5 (AM 1.5 spectrum). The tolerance for the value is ±10%.*

*** Test load ± 5400 Pa, Max altitude: 2000 m*