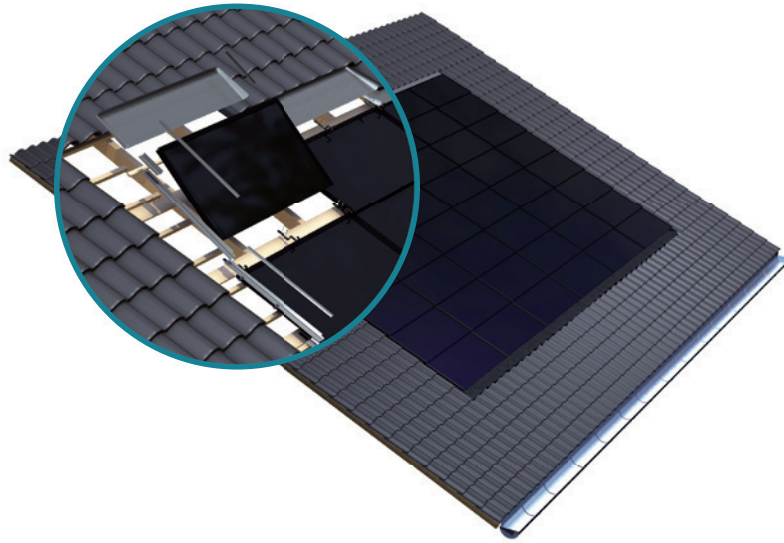


ROOF TILE AND ENERGY GENERATOR



Elegant appearance

- The elegant building-integrated solution enhances the building
- The sleek black glass surface and black frames meet the most demanding architectural requirements
- The perfect combination of form and function does not detract from the appearance of the roof

Easy installation

- Modules laid like tiles on simple roof battens
- Compact module format enables easy installation by a single installer
- Accessories enable simple connection to the roof covering

High quality

- A 3 mm-thick toughened front pane and a high quality edge seal permanently protect the module against environmental influences
- Proven frame design ensures leak-tightness comparable with conventional roof tiles
- Robust aluminium frames

High yields

- The integrated roof system is based on Linion R thin-film modules that provide maximum efficiency thanks to the CIGSe absorbers
- Unobstructed drainage and smooth cover glass ensures excellent self-cleaning

Practical and quick system solutions for roof integration

Solstructure's Pallium roof-integrated system opens up new possibilities in solar construction. The modules are installed like tiles on the roof battens of your house and completely replace conventional tiled roofs. The protective roof over your head simultaneously generates clean, renewable energy. With its homogenous black glass surface and black frames, the Linion R roof-integrated modules meet the most demanding architectural requirements. With Pallium, Solstructure provides a complete system – ready for installation and with all parts required for integration into the roof. The modules can be flexibly arranged in accordance with different roof shapes. Pallium is based on the Solrif[®] roof-integrated system that has been successfully deployed for more than ten years.

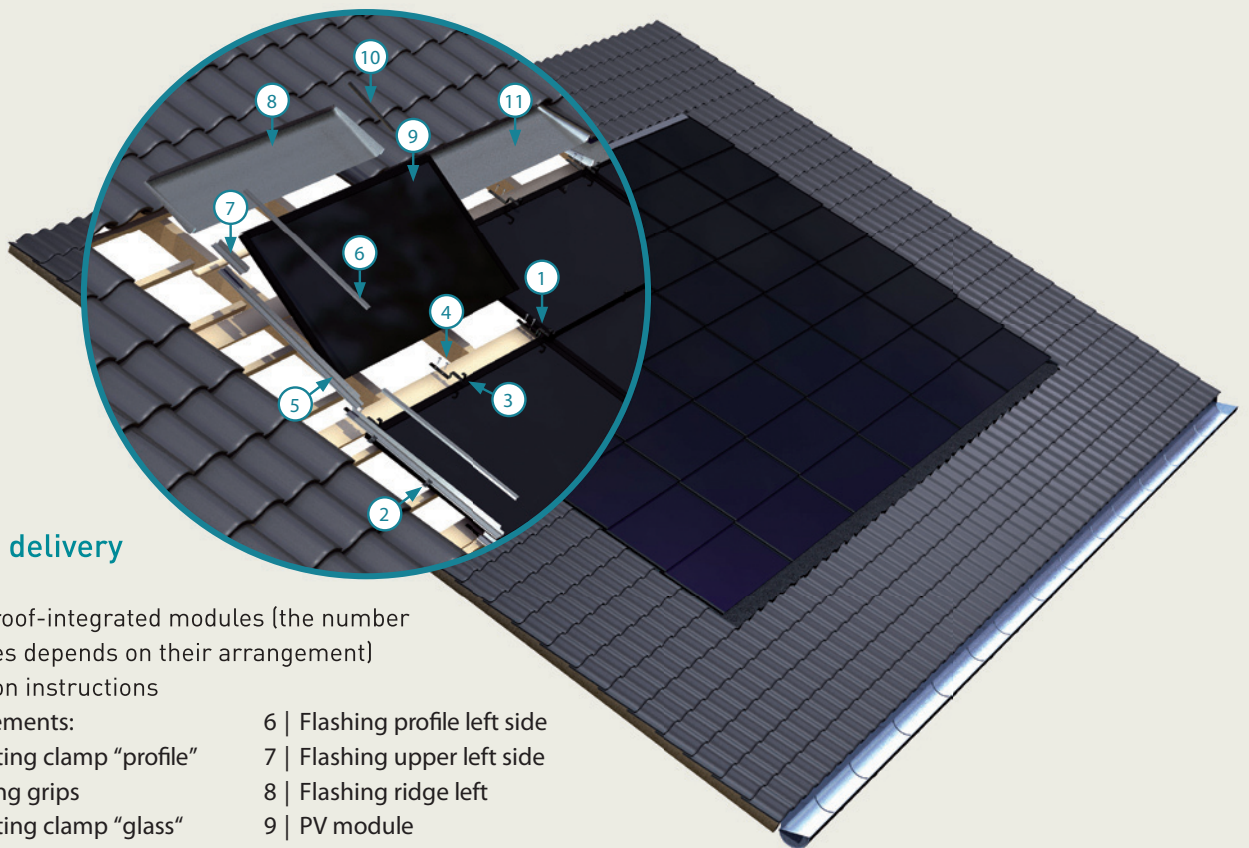
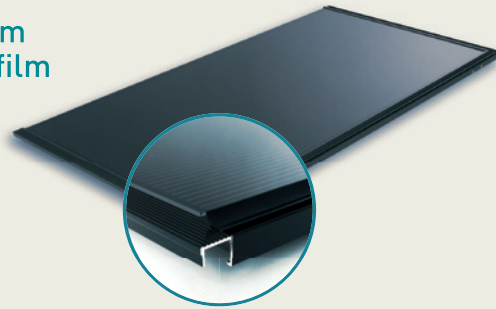


Various planning tools enable the system layout to be designed in just a few minutes in accordance with the specific site.

PALLIUM

ROOF-INTEGRATED SYSTEM

Pallium – the complete system for integrating Linion R thin-film modules into roofs



Scope of delivery

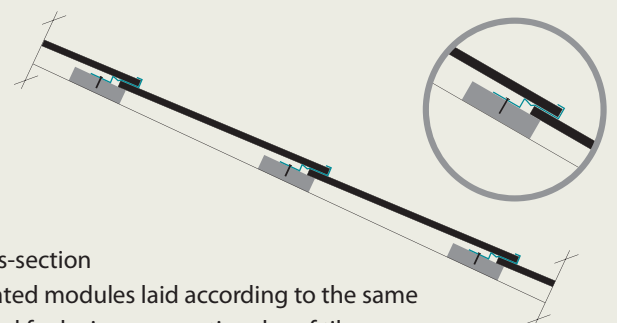
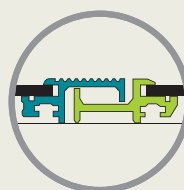
- Linion R roof-integrated modules (the number of modules depends on their arrangement)
- Installation instructions
- Solrif[®] elements:

1 Mounting clamp "profile"	6 Flashing profile left side
2 Flashing grips	7 Flashing upper left side
3 Mounting clamp "glass"	8 Flashing ridge left
4 Cylinder-head screws	9 PV module
5 Flashing left side	10 Join capping piece
	11 Flashing ridge middle

Easy to install



Horizontal cross-section
Solrif[®] connections
between the modules



Vertical cross-section
Roof-integrated modules laid according to the same
principle used for laying conventional roof tiles

Technical data	PALLIUM 85	PALLIUM 90
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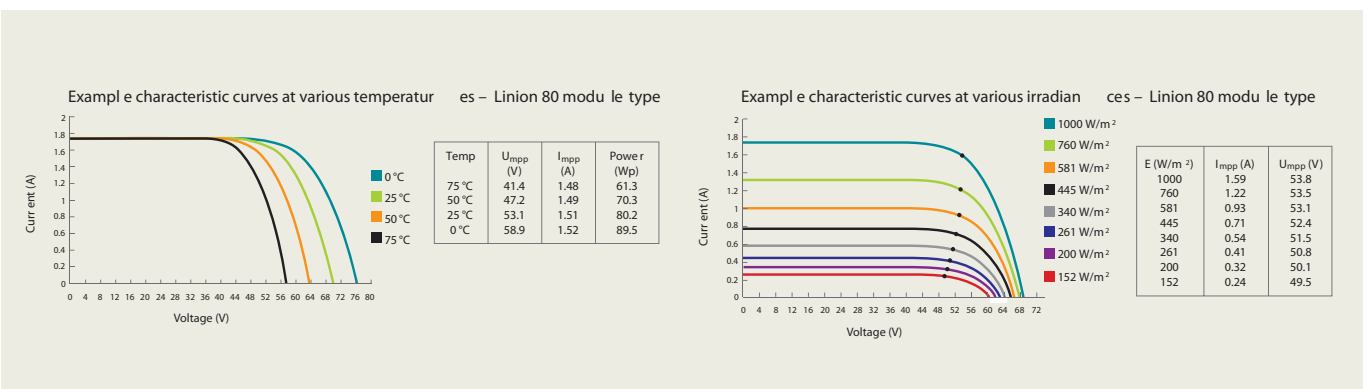
Electrical characteristics at 1000 W/m ² ; 25 °C; AM1.5		
Rated power P _{max}	85.0 W	90.0 W
Tolerance (P _{max})	+5/-0 W	+5/-0 W
Module efficiency	9.5%	10.1%
Rated voltage* U _{mpp}	53.8 V	55.4 V
Rated current* I _{mpp}	1.58 A	1.63 A
Open circuit voltage* U _{oc}	68.5 V	70.4 V
Short circuit current* I _{sc}	1.74 A	1.79 A
Maximum system voltage	IEC 61730	1000 V
	UL 1703	600 V
Reverse current rating	3.5 A	3.5 A
Max. no. of modules connected in series per string (+10% tolerance; 1000 V [IEC]; -10°C)	11	11
Maximum no. of modules in parallel**	Individual strings connected to a blocking diode in (+) and 3 A fuse in (-).	

Electrical characteristics at 800 W/m ² ; NOCT; AM1.5		
Power* P _{max}	61.1 W	65.0 W
Voltage* U _{mpp}	48.5 V	50.0 V
Current* I _{mpp}	1.26 A	1.30 A
Open circuit voltage* U _{oc}	61.3 V	63.1 V
Short circuit current* I _{sc}	1.39 A	1.43 A

Electrical characteristics at 200 W/m ² ; 25 °C; AM1.5		
Maximum absolute reduction of efficiency	1.0%	1.0%

Thermal behavior		
Working temperature (NOCT)	49 °C	
Power temperature coefficient T _c (P _{max})	-0.50%/K	
Voltage temperature coefficient T _c (U _{oc})	-0.35%/K	
Current temperature coefficient T _c (I _{sc})	+0.01%/K	

Operating conditions		
Temperature range	-40 °C to +85 °C	
Maximum mechanical load***	IEC 61730	2400 Pa; 145 kg/m ²
	UL 1703	1600 Pa; 33 lb/ft ²
Maximum torsion	1.2°	
IP code (to DIN EN 60529)	IP65	
Protection class (to DIN EN 61140)	II	
Application class (to IEC 61730)	A	
Fire rating (to IEC 61730)	C	



Notes
* Tolerance of the electrical parameters ± 10%
** Limited: See explanation in the Electrical Configuration section in the installation instructions for Soltecture PV modules.
*** Observe installation instructions for Soltecture PV modules.
www.fvgenenergy.com

PALLIUM

ROOF-INTEGRATED SYSTEM

Technical data

Dimensions (Linion R module)

Height / Width	1302 mm / 684 mm
Layout grid	1285 mm / 650 mm
Frame thickness	23 mm
Frame thickness with junction box	23 mm
Weight	14.6 kg

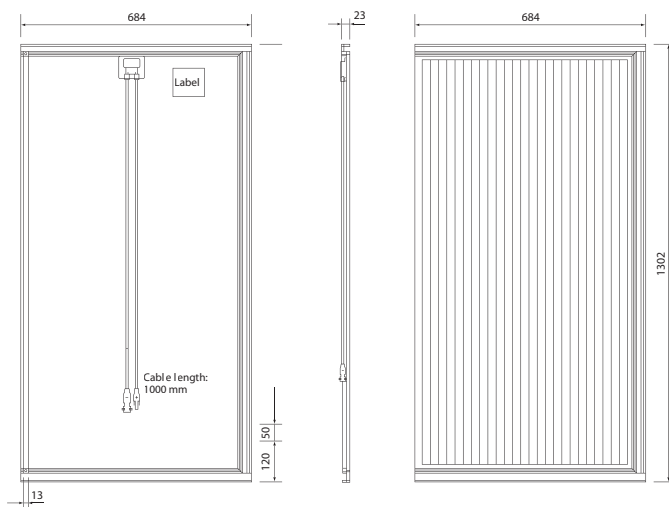
Additional data

Maximum roof slope	15 degrees
Recommended string fuse	3 A (e.g. Socomec 60PV0003)
Included bypass diode	1 x Diotec BY550-1000
Connection cable	(+) 1000 mm; (-) 1000 mm
Plug connector	Y-SOL 4
Cell type	ClGSe thin-film
Front glass	3 mm tempered safety glass
Rear glass	3 mm float glass
Encapsulation	EVA
Frame type	Acrylic paint

Certificates and warranties (for Linion R modules)

TÜV certificates: IEC 61646, IEC 61730 UL 1703 Listed Manufactured in the EU CE-marking	 <ul style="list-style-type: none"> • Qualified, IEC EN 61646 • Safety tested, IEC 61730 • ANSI/UL 1703 listed • Periodic Inspection 
Independent product warranty	10 years (for Linion R modules)****
Independent output warranty	25 years (for Linion R modules)****

Sketch of the Linion R module



Notes

**** See Soltecture GmbH's independent manufacturer warranty for Linion PV modules (last revised October 2011).
 The modules are not suitable for mobile or maritime applications. Please note that if the Linion PV modules are stored in dark spaces for long periods, they must then be exposed to sufficient solar radiation to attain their rated output.
 As we continually optimize our solar modules, related data pertinent to these changes will be cited in the technical data sheet. All information applies exclusively to modules produced during the most recent product revision. The modules are certified for use in the following countries: EU countries, Switzerland, Norway, Turkey, Liechtenstein, Israel, Lebanon, Croatia, Bosnia and Herzegovina, Serbia. (09/2010)

About Soltecture GmbH

Based in Berlin, Soltecture is a leading manufacturer of CIS-based thin-film solar modules and a provider of comprehensive system solutions for solar construction. Whether for large commercial roofs or single-family homes, Soltecture offers suitable modules and systems

for all kinds of roofs. The company is the exclusive partner of the Helmholtz Centre Berlin, Europe's largest research institute for thin-film photovoltaics. Its shareholders and owners include Intel Capital, Vattenfall Europe and Gaz de France Suez.



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