SOLARWATT®

PRODUCT

EasyIn 60M style

Glass-Glass-Module for roof integration

Module frame = Mounting assembly

The Solarwatt glass-glass modules EasyIn 60M style produce solar power and at the same time replace conventional roofing. High aesthetics, resistance to weathering and longevity of the modules make the EasyIn system a good alternative to conventional on-roof systems.

The high-performance PERC solar cells are embedded almost indestructibly in the glass-glass composite and thus optimally protected against all weather effects and mechanical stress. Solarwatt can therefore offer a 30-year warranty on performance and product quality.

The Solarwatt FullCoverage insurance is included for 5 years and free of charge. It insures almost all risks and takes effect even if the modules do not produce electricity or deliver less than expected in the event of damage.

PRODUCT QUALITY

- ammonia resistant
- intensive hailstorm resistant
- salt mist resistant
- 100 % plus-sorting
- 100 % PID protected

SERVICE

FullCoverage insurance
included (up to 1,000 kWp*)

Simple returns policy
as per „Delivery terms for Solarwatt solar modules"

30 Year Product Warranty
as per „Warranty conditions for Solarwatt solar modules"

30 Year Performance Warranty
on 87 % of nominal power as per „Warranty conditions for Solarwatt solar modules"

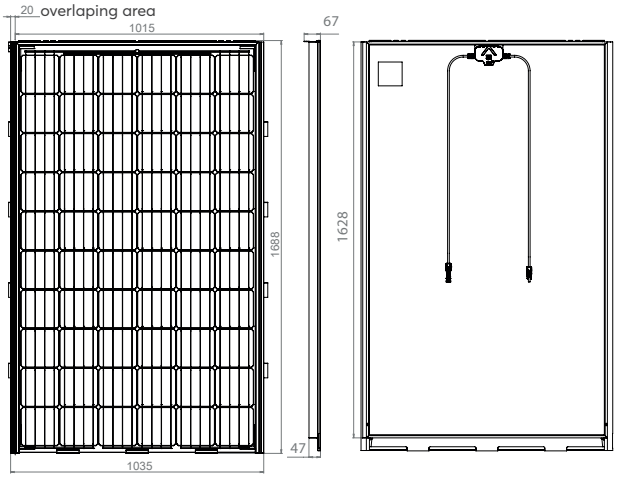
* country-specific deviations apply

SINCE 1993
MADE IN GERMANY

IN OUR FACTORY AND OFFICES
100% GREEN ENERGY

Technical data sheet
Easyln 60M Style

DIMENSIONS



The roof constructions must comply with the general requirements of the directives of local construction regulations; the system is designed for 40 x 60 mm roof battens.

Application site	In upright position as roof integration in pitched roofs; 22° - 65° roof pitch; 16° minimum roof pitch with usage of a water-tight sub-roof according to the guidelines of the local construction regulations
System Components	Solar modules with special frame, seals, wind suction retainers, special screws, sarking membrane, aluminum guide rail and bearing

ELECTRICAL DATA (STC)

STC (Standard Test Conditions): Irradiation intensity 1,000W/m², spectral distribution AM 1,5 | Temperature 25 ± 2 °C, in accordance to EN 60904-3

Nominal power P_{max}	305 Wp	310 Wp	315 Wp	320 Wp
Nominal voltage V_{mp}	32,5 V	33,0 V	33,2 V	33,7 V
Nominal current I_{mp}	9,50 A	9,52 A	9,56 A	9,58 A
Open circuit voltage V_{OC}	40,8 V	41,0 V	41,1 V	41,2 V
Short circuit current I_{SC}	9,98 A	9,99 A	10,03 A	10,04 A
Module efficiency	18,5 %	18,8 %	19,1 %	19,4 %

Measurement tolerances: P_{max} ±5 %; V_{OC} ±10 %; I_{SC} ±10 %, I_{MP} ±10 %

Reverse-current power rating I_R: 20 A, operating modules with an external power source is only permissible if using a phase fuse with a tripping current of ≤ 20 A.

ELECTRICAL DATA (NMOT AND WEAK LIGHT)

NMOT (Nominal Module Operation Temperature): Irradiation intensity 800 W/m², spectral distribution AM 1,5, Temperature 20 °C
Weak light conditions: Irradiation intensity 200 W/m², Temperature 25 °C, Wind speed 1m/s, load operation

Nominal power $P_{max\ @NMOT}$	226 W	230 W	234 W	238 W
Nominal power $P_{max\ @200\ W/m²}$	60,8 W	61,8 W	62,8 W	63,8 W

Measurement tolerances: P_{max} ±5 %; V_{OC} ±10 %; I_{SC} ±10 %, I_{MP} ±10 %

Reduction of module efficiency when irradiance is reduced from 1000W/m² to 200W/m² (at 25 °C): 4 ± 2 % (relative) / −0,6 ± 0,3 % (absolute).

GENERAL DATA

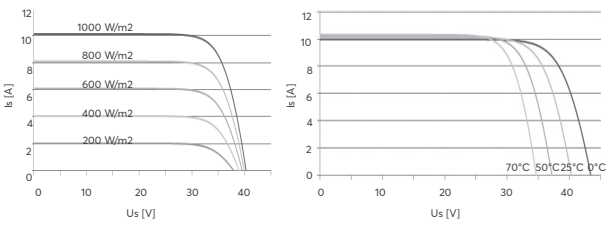
Module technology	Glass-glass laminate; aluminum frame, black
Covering material **Encapsulation** **Backing material**	Tempered solar glass with anti-reflective finish, 2 mm Solar cells in polymer encapsulation, transparent Tempered glass, 2 mm
Solar cells	60 monocrystalline high power PERC solar cells
Cell dimensions	157 x 157 mm
L x W	Module dimensions (total length): 1.688 x 1.035 mm Cover dimensions: 1.642 x 1.015 mm
Height	module height of side without junction box: 47 mm module height of side with junction box: 67 mm
Weight	appr. 24 kg
Connection technology	Cables 2x 1,0 m/ 4 mm² Hirschmann HC4-connectors
Bypass diodes	3
Max. system voltage	1,000 V
Application class	II (nach IEC 61140)
Fire resistance test	DIN ENV 1187
Hail resistance	Tested with simulated hailstones (Ø 25 mm, at ~83 km/h)
Certified mechanical ratings as per IEC 61215	Suction load up to 2,400 Pa (test load 3,600 Pa) Pressure load up to 5,400 Pa (test load 8,100 Pa)
Qualifications	IEC 61215 (inkl. LeTID) | IEC 61730 | IEC 61701 IEC 62804 | IEC 62716

THERMAL FEATURES

Operating temperature range	-40 … +85 °C
Ambient temperature range	-40 … +45 °C
Temperature coefficient P_{max}	-0,39%/K
Temperature coefficient V_{OC}	-0,31%/K
Temperature coefficient I_{SC}	0,05%/K
NMOT	44 °C

CHARACTERISTIC LINES (PERFORMANCE CLASS 310 WP)

Voltage characteristic line at different temperatures and irradiations



TRANSPORT AND PACKAGING

Modules per palette	36
Palette dimensions (gross) L x W x H	1.800 x 1.070 x 1.500 mm
Gross weight per palette	650 kg
Palettes per truck	14
Modules per truck	504

EasyIn 60M style

EasyIn 60M style - replace conventional roof tiles

Premium glass-glass-modules

- Durable and innovative glass-glass composite
- Weatherproof roofing replacing roof tiles
- Rear ventilation for high yields
- Resistant and resilient

Fast and simple installation

- No additional mounting components required
- Fastened directly to the roof battens
- Limited number of separate parts
- Universal roof-module connection profiles included
- Metal framing components for tile connection optionally available

FullCoverage insurance

- Insurance protecting against all damage
- Compensates for lost earnings
- Makes up the shortfall if yields fall below minimum
- Available within the EU

MOUNTING AND REAR VENTILATION

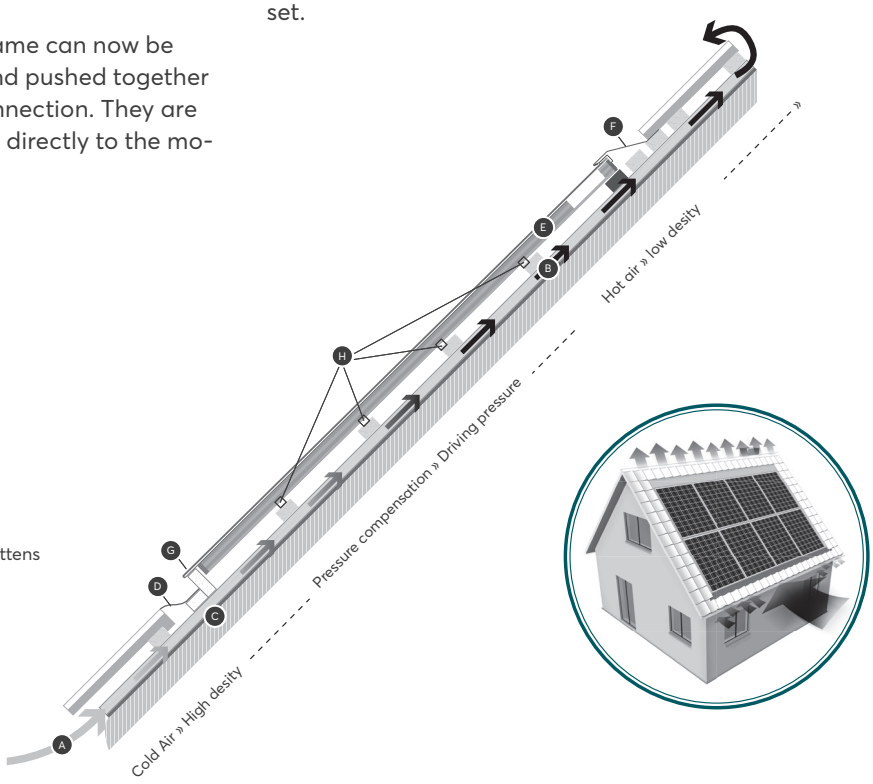
Sarking membrane
The sarking membrane is laid free of crimps and wrinkles parallel to the eaves and fastened to the rafters or the roof boards.

Aluminium guide rail
One aluminum rail is installed for each module row for dimensionally stable mounting and for simple grounding of the solar modules.

Placing the modules
The modules with the upper module frame can now be hooked into the aluminum guide rail and pushed together laterally with a tongue-and-groove connection. They are mounted with suction anchors screwed directly to the module and the roof battens.

Module-roof connection
The final integration of the module field in the roof is carried out by universal module-roof connection profiles. The result is a weatherproof, rainproof and well ventilated roof covering.

Roofing frame (flashing)
The final integration takes place with the tinplate. Adapted to a large number of roof tile models, Solarwatt optionally offers a color and geometrically optimally adjusted tinplate set.



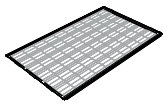
A Cold air flow
B Warm air flow
C Rafters with sarking membrane and counter battens
D Lower enclosure frame
E EasyIn Module
F Upper enclosure frame
G Supporting board 98 x 20 mm
H Attachment angle

Roof battens
Aluminum guide rail

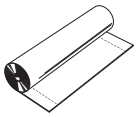
Technical data sheet
EasyIn 60M Style

SYSTEM COMPONENTS

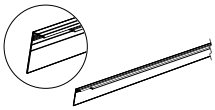
Solar module



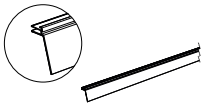
Sarking membrane



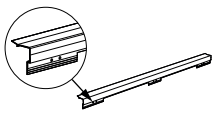
Module-roof connection left



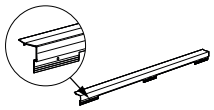
Module-roof connection right



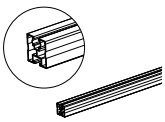
Module-roof connection top long



Module-roof connection top short



Aluminum guide rail

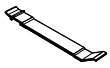


Fastening plate for aluminum guide rail

Wood screws

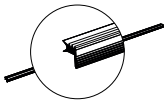
Mounting bracket

Spacer

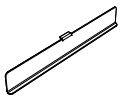


Self-tapping screws

Transverse seal



Transverse seal clip



INFORMATION ABOUT THE ROOFING FRAME

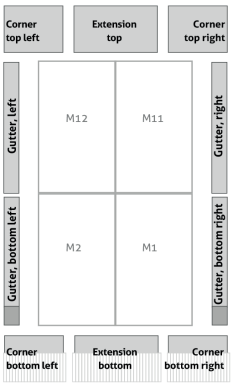
TECHN. DATA AND REQUIREMENTS FOR MODULE AREA

Materials/Color	Aluminum/black
Flashing technology	Crimped metal
Joint seal technology	UV and fire proof prefab soft foam sealing, bitumen bonding
Temperature requirements	Bitumen bonding should not be installed at less than 5 °C
Ambient temperature range	-40 °C to +45 °C
Shape of the installation	Square or rectangular
Openings within the installation	Not supported
Installation size	Unlimited number of rows and columns
Installation edges	Roof tiles on all 4 sides

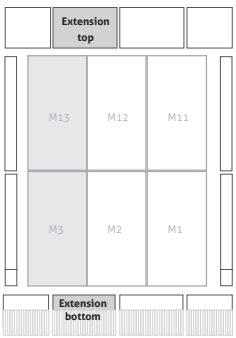
REQUIREMENTS FOR ROOF TILES AND ROOF

Max. tile thickness	contoured tiles with max. 50 mm thickness above roof batton
Covering length	Cover length and width must be adaptable for varying plant sizes, a nominal covering lenth of 330 mm is recommended
Covering width	
Recommended tile styles*	e.g. Topas 13, Frankfurter Pfanne, Domino, Cantus, Z10 *depending on the individual roof layout
Roof pitch	22° to 29° / 30° to 65°
Roof battens	According to German roofing standards 3 additional roof battens necessary above modules to secure the installation
Sarking membrane	see EasyIn Installation Manual

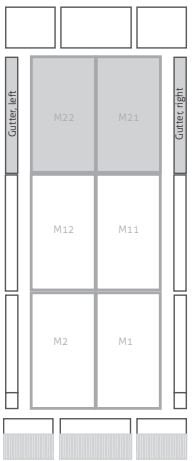
EXTENSION-SETS



Basic set for
2 x 2 modules



Horizontal extension set
for an extra column



Vertical extension set
for an extra row

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