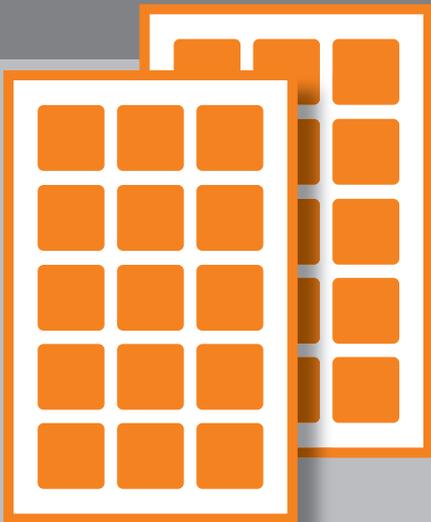




Installation Instructions

**Important
Installation and
Assembly instructions**
*Read the instructions before
starting the installation
of the EasyIn modules.*



EasyIn 60M style

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We congratulate you on your purchase of the SOLARWATT EasyIn In-Roof PV System with its extremely reliable double-glazed configuration.

The quality of the modules made exclusively in Germany is ensured by repeated product testing throughout the entire production process.

SOLARWATT modules are tested by certified institutions and meet the requirements of the extended testing standard IEC 61215 Ed. 2 and safety standard IEC 61730. SOLARWATT's own research and development department has a wealth of measuring, testing and environmental simulation equipment for testing its products to far exceed the requirements of the usual standards and ensure continuous optimization.

The SOLARWATT EasyIn System is an intelligent solution which is easy to install thanks to the innovative and proven module design based on the roof tile principle. SOLARWATT EasyIn Modules are mounted onto the roof battens and simply connected to each other. The frame profiles are used to attach the modules to the roof battens and to secure the rainproof connection to adjacent modules. This is how the SOLARWATT EasyIn System replaces traditional roofing, upgrades your roof with the additional benefit of energy generation and has an in-roof look that sets standards.

1 General information

1.1 About these instructions

These instructions explain how to install SOLARWATT EasyIn modules with double-glazed laminate on the roof. They are intended for authorized personnel familiar with installation on the basis of their occupational qualifications. Modules should be installed and connected only by trained, authorized personnel. These personnel must be familiarized with these installation instructions before they undertake the installation and they must comply with them so that the system is fully functionally secure and rainproof.

The instructions explain the installation in individual sequential work steps. We recommend that you observe

the sequential order described, even if a deviating job sequence should arise.

Please note that in some work steps the installation of the SOLARWATT roofing frame is referred to. If you have also purchased one of these, please use the relevant installation instructions for its installation.

If you have not purchased the SOLARWATT roofing frame, we advise that you require a customized enclosure frame to connect to the rest of the roof. This type of customized solution is appropriate when the roof has specific features such as dormer windows or windows in the area of the solar system, but it must still observe roofing trade guidelines and rules.

1.2 Validity

These installation instructions apply to the SOLARWATT EasyIn 60M style module with double-glazed configuration (covering length 1.642 mm), in connection with the installation instructions for the optional SOLARWATT roofing frame for the SOLARWATT EasyIn 60M style module. This roofing frame is suitable for rectangular module fields and for medium-profiled roof tiles with a configuration height of up to 50 mm (see chapter Figure 1 on page 4) above the roof batten.

These installations do **not** apply to the SOLARWATT Orange Easy-In module with glass-film laminate (covering length 1.715 mm).

Figure 1



1.3 Symbols used

IMPORTANT

This symbol marks instructions to be strictly observed to prevent endangering or injuring people, damage to equipment or violation of the guarantee provisions. The current guarantee provisions are available at www.solarwatt.de.

NOTE

This symbol designates technical instructions to be observed to prevent damage and malfunctions to the modules and to ensure optimum installation/operation.

1.4 Limitation of liability

Please note the information on the following pages regarding the SOLARWATT EasyIn System. The manufacturer is unable to monitor whether these instructions and the conditions and methods for installation, operation, use,

and maintenance are complied with. Incorrect installation can cause damage to property, which could consequently pose a risk to people.

IMPORTANT

Failure to comply with the installation instructions results in the warranty and guarantee becoming null and void and to the exclusion of any additional compensation and liability claims.

We do not assume any responsibility or liability whatsoever for loss, damage or costs resulting from or in context with faulty installation, improper operation or incorrect use and maintenance.

used, SOLARWATT shall not assume any liability for their use. Prior to the first installation we recommend a training course given by our staff.

If other roofing frames other than SOLARWATT frames are

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2 Transport, Storage, Handling

IMPORTANT

SOLARWATT modules are manufactured using high-quality materials, making them extremely sturdy and long-lasting. The modules should nevertheless be left in the packaging until installation to help prevent any damage.

Transport

IMPORTANT

You are obligated to check all goods delivered as well as their packaging immediately for transport damage.

What to do in event of transport damage

If any damage is noted, note it on the shipping papers describing each pallet in detail and take photographs as documentary evidence. Have the driver countersign these notes. If more than 10 solar modules on one pallet are damaged, refuse to accept the pallet. Please fill out the "Transport Damage Complaint Notification" form (www.solarwatt.de) and return it to SOLARWATT GmbH.

Please do not remove any parts or rating plates from the modules. Do not install modules if damaged.

Disposal of packaging

Please recycle the packaging (foils, straps, packing corners and the pallet). Contact the local waste management company responsible regarding recycling.

IMPORTANT

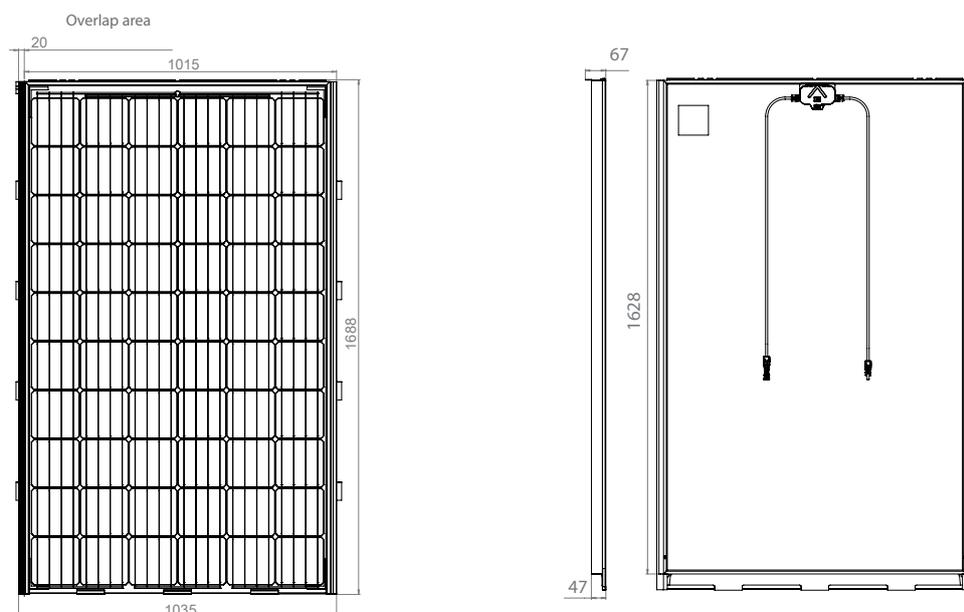
Stacking pallets will cause damage to the SOLARWATT EasyIn Modules and must absolutely be avoided! It is recommended that the SOLARWATT EasyIn modules are stored in a dry and frost-free place in their original packaging until they are installed. Please also observe the warning notices stated on the packaging units.

Handling on the roof and the ground

SOLARWATT EasyIn modules are delivered on a pallet and are well protected by water-proof foil against the effects of weather. The modules can be removed easily by simply lifting the two module ends. The modules must not be tilted, because they are hooked into one another and tilting could bend the module frame.

The innovative design of the modules makes them easy to handle on the roof. The lug on the top part of the frame enables a safe interim storage on the roof battens at any time.

3 Information about the EasyIn 60M style module



The roof construction must comply with the general requirements of the directives of the Central Association of the German Roofing Trade (ZVDH); the system is designed for **40 x 60 mm roof battens**.

Module Technology	Glass-glass-laminate; aluminum frame, black
Cover material Encapsulation Rear-side material	Tempered solar glass with anti-reflective finish, 2 mm EVA solar cells-EVA Tempered solar glass, 2 mm
Solar cells	60 monocrystalline solar cells
Cell measurements	156 x 156 mm
L x W	Module measurement (total length): 1688 x 1035 Roof cover dimensions 1642 x 1015
Module height	Height non-connection side: 47mm Height connection side: 67mm
Weight	About 24 kg
Connection technology	Cable 2 x 1.0 m/4 mm ² , Hirschmann HC-4 connector
Bypass diodes	3
Application Class	A (as per IEC 61730)
Max. system voltage	1000 V
Tests for mechanical load capacity As per IEC 61215 Ed.2	Suction load to 2400 Pa Certified load to 5400 Pa (uplift resistance as per DIN 14437) (wind speed 130 km/h with safety factor 3) For approved load capacities, see installation instructions.
Qualifications	IEC 61215 Ed.2 IEC 61730 (incl. protection class II)
Hail resistance	Tested with simulated hailstones (Ø 25 mm, at ~83 km/h)
Fire resistance test	DIN ENV 1187
Installation location	Upright as roof integration in pitched roofs on buildings up to 18 m high; roof pitch 22° - 65°; 16° minimum roof pitch when using a water-tight sub-roof according to ZVDH guidelines (Central Association of German Roofers).
System components	Solar module with special frame, seals, suction protection measures, special screws, sarking membrane, aluminum guide rail with attachment.

4 Notes on installation and connection

The installation of the EasyIn modules has been well prepared at the factory due to their different features. Incorrect installation or commissioning can lead to damage which could consequently pose a risk to people. Produce a plan for potential maintenance and repair work. This should include documentation relating to the layout of the modules including assigned serial numbers

and cable routing. Keep this together with the documentation relating to your photovoltaic system.

The structural analysis for the roof construction, specified in these installation instructions in conjunction with the EasyIn system, is provided according to DIN 1052 and DIN 1055.

IMPORTANT

Whichever EasyIn system is to be installed, the following structural requirements must be observed:

1. In the installation of load-bearing wood fastenings, the connector spacings specified in the standard must be complied with.
2. Batten joints are to be designed according to ZVDH guidelines.

NOTE

Always install the modules on suitable roof battens. Ensure that mechanical tension in the actual structure (e.g. roof framework) is not transferred to the module. Check the static suitability of the building for the installation of a solar power system.

NOTE

The electric wiring must already be in place before each module is attached because after the modules have been attached the connections will no longer be accessible.

The electric wiring of the EasyIn system components is contingent on local conditions and is therefore to be laid out and installed on a case-by-case basis by each installer. A few helpful notes will be provided in this regard. During the design process of the EasyIn system relevant structural precautions were taken regarding the impermeability of the roof.

As no warranty can be assumed for the correct technical installation, it is essential that the EasyIn system and the corresponding module connection/enclosure frame are installed by a technical expert who can also guarantee the impermeability of the roof.

IMPORTANT

The drainage holes in the module frame must not be covered, as it could cause frost damage on the module frame. Modules must be installed so that no water can run towards the cable screws. The module connector must not lie on the sarking membrane. Therefore you must install the module in the way shown and fasten the cable/connector as usual to the roof battens.

NOTE

It is recommended to prepare a string plan of the PV system and measure the respective string voltages after the modules wired in a row are installed by appropriately trained technicians. This should also be documented in writing.

General conditions to be observed

- The system has only been tested with the materials stated in System Components (see Chapter 8) and is therefore only approved for these.
- To ensure sufficient ventilation counter battens must be used.
- The sarking membrane supplied must be used as mandatory.
- Max. rafter spacing: 1 m; max. building height: 18 m; max. wind load zone: 2; max. snow load zone: 3 and max. 530 meters above sea level (or equivalent): H and I (according to DIN 1055).

5 Preparation and planning

Use the planning tool provided on www.solarwatt.de to create a layout plan for the entire roof. This must include eaves, the module field, ridge and tile cover, along with

any other features of the building such as skylights or dormers.

5.1 Eaves

The configuration in the eaves area is an important pre-condition for the installation of the module field (e.g. accessibility). Therefore you must plan and implement this carefully and in accordance with the technical rules of the German Roofing Trade (ZVDH) and the roof structure chosen. As specified in the EasyIn planning sheet the

minimum spacing between module field and eave must be complied with for the following reasons:

- Increased wind load at the roof edges
- Construction of a functioning water drain to avoid water pockets forming, backfill and overspilling rain-water.

5.2 Ridge

The ridge area must include sufficient space so as to comply with the minimum spacing between the topmost module edge and/or roofing frame and ridge as stated in the EasyIn planning sheet.

5.3 Batten layout, vertically from bottom to top.

For clarity purposes the substructure below is first displayed in the vertical, and then in the horizontal installation orientation (see chapter Figure 2 on page 9).

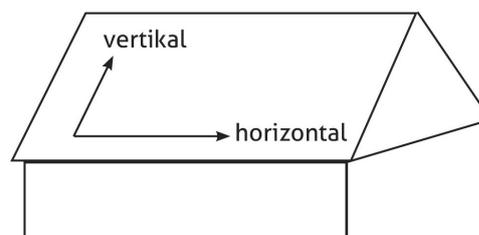
In Figure 3 on page 10 the vertical system configuration for 2 module rows is displayed (there is an enlarged image of Figure 3 in Chapter 9.1 on page 33).

The top part shows the requisite layout of the battens for the layout and the fastening of the modules and the roofing frame.

The bottom part shows the layout of the battens for the roof tiles which are laid with a standardized batten spacing (LA) next to the module field.

The two areas are connected via the continuous battens U below, and O above, the module field and which also run in the roof tile area.

Figure 2



! IMPORTANT

The specified spacings and tolerances for the layout of the battens under the modules must be complied with for static reasons. For batten distances under the roofing frame, please observe the information provided by the relevant supplier.

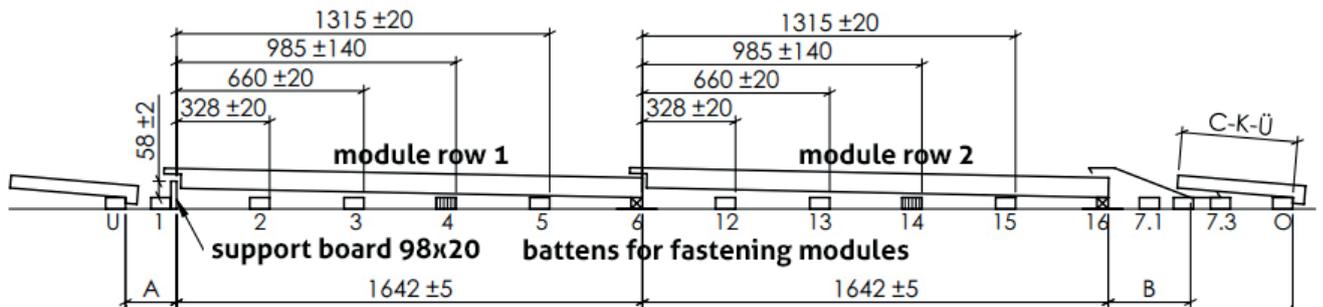
! NOTE

Please note for planning purposes, that the spacing between battens U and O for the module area and roof tile area must align with each other.

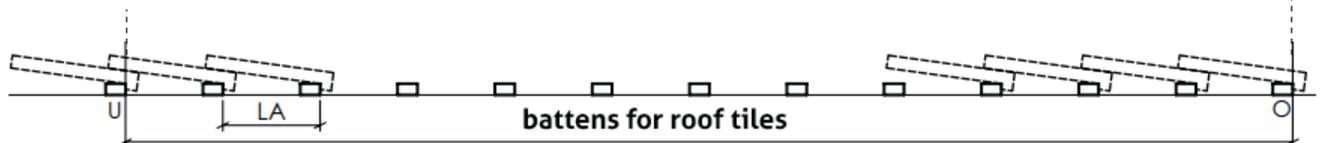
You must also design the eave and ridge and adapt it together with the batten spacing LA to the circumstances of your roof.

Figure 3

Layout of battens for modules and roofing frame



Layout of battens for roof tiles



- | | | | |
|---|-----------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------|
| A | Spacing between batten U and topside of supporting board (See Chapters 5.3.1 and 5.3.4) | K | Potential shortening of the roof tile in the tile row above the module field (see Chapter 5.3.4) |
| N | Number of module rows | Ü | Potential additional overlap between roof tile and top enclosure frame which projects 100 mm (see Chapter 5.3.4) |
| B | Measurement of top enclosure frame (See Chapter 5.3.2) | | |
| C | Pitch length of the roof tile | | |

Total spacing D between batten U and batten O is calculated from:

$$D = A + (N \times 1.642 \text{ mm}) + B + C - \ddot{U} - K$$

5.3.1 Spacing A below module field

Measurement A is determined by the roof-pitch dependent overlap length between the enclosure frame lower edge (dead plate end on eaves) and the roof tiles as well as the overhang length of the respective roof tile (see Figure 13 on page 18). When installing the SOLARWATT

enclosure frame, the lower enclosure frame including the dead plate has a vertical length of 250 ± 10 mm, related to the top side of the supporting board 98×20 mm. In Table 2 on page 13 Measurement A is generally set at 150 mm.

5.3.2 Measurement B and battens above the module field for the upper enclosure frame

Roof battens 7 are needed directly above the module field to support and attach the upper enclosure frame. When using the SOLARWATT roofing frame the measurements for battens 7.1 to 7.3 are stated in the relevant installation instructions.

Note that the spacings for battens 7.1 to 7.3 for a roof pitch $30-65^\circ$ and $22-29^\circ$ are different.

This results in the following values for Measurement B:

B = 180 mm for roofing frame $30-65^\circ$

B = 310 mm for roofing frame $22-29^\circ$

IMPORTANT

Measurement B does not describe the position of batten 7.2.

5.3.3 Battens 1-6 under each module

Table 1 Shows another overview of the batten spacings and tolerances for the batten layout underneath the solar module.

The reference point for the batten spacings of the lowest module row is the top side of the supporting board 98×20 .

The same batten spacings also apply to every higher row

of modules. The reference point then used is the top side of aluminum guide rail 6 of the module row beneath.

For battens 4 (14; 24; 34) a larger tolerance range applies because these are only used as protection against any fall through. For this purpose in most cases the nearest battens from the roof tile area can simply be planned to be pulled through.

Table 1

Batten number	Type	Spacing to Top side supporting board [mm]	Tolerance [mm]	Purpose
Batten 1 with supporting board	Wood batten 40×60 mm Board 98×20 mm	0		Supporting board for lowest module row
2 (12; 22; 32)	Wood batten 40×60 mm	328	± 20	Module fastening
3 (13; 23; 33)	Wood batten 40×60 mm	660	± 20	Module fastening
4 (14; 24; 34)	Wood batten 40×60 mm	985	± 140	Occupational health and safety
5 (15; 25; 35)	Wood batten 40×60 mm	1,315	± 20	Module fastening
6 (16; 26; 36)	Aluminum guide rail 40×40 mm on the fastening plate	1,642	± 5	For module earthing and for safe storage of module prior to screwing

For batten measurements for complete module fields, see Chapter 9.4 on page 36.

5.3.4 Battens for roof tile area

The total spacing between the battens U and O is determined primarily by the module measurements. There are limited change options which are restricted by the roof pitch and primarily by the shape and measurements of the planned roof tile:

- Spacing A is also dependent on the structural height of the roof tile above the batten (limit value approx. 50 mm) and the possibility of grinding higher water seams at the top end of the roof tile.
- Possibility of shortening the roof tile (measurement K) in the roof tile row above the module field.
- Possibility for additional overlap of the top enclosure frame by the roof tile (measurement \ddot{U}), whereby it

must be ensured that the inherent load of the roof tile must only project over the specified supports in the enclosure frame on the roof.

- The size of overlap \ddot{U} and of shortening K depends on the roof tile and the top roof tiling sheet and must be determined by a roofer.

If these possibilities are not sufficient, the use of shorter or longer roof tiles should be considered, in other words, one tile row more or less next to the module field.

Batten spacing LA for the tile area is determined from the total spacing between battens U and O which shall also then apply to any further tile rows above and below the module field.

5.3.5 Optimum number of roof tile rows

Table 2 on page 13 includes for each number of module rows the respective optimum number of tile rows. With this number of tile rows there are no dimensional overlaps of battens from the module area with battens from the tile area. This enables both batten types at the

left and right edges of the module field to be pulled through to the next counter batten/rafter and fastened there. An overlap is only possible with battens for the top enclosure frame.

5.3.6 Batten joints between rafters

There may be reasons to select a non-optimal number of tile rows so that some battens from the tile area can overlap, in full or in part, with battens from the module area. In this case the roof statics must be ensured by additional vertical and horizontal battens. Chapter 9.2 on page 33

in the appendix lists a design variant for a transition between roof batten and aluminum guide rail for a rafter spacing of 1.0 m. Transitions between wood battens are to be implemented in the same way.

5.3.7 Examples of batten layouts for a roof pitch of 30-65°

Table 2 specifies total spacing D between battens U and O as well as batten spacing LA for different roof tile types for a structure as in Figure 3 on page 10. Also specified are vertical overlap lengths

- between the lower dead plate of the SOLARWATT roofing frame and roof tiles on batten U
- between the roof tiles in the tile area next to the module field.

For information on other roof tile types, see Chapter 9.3 on page 35.

Measurements and spacings for eaves and ridge are not included in this, but must be designed separately based on the circumstances of the roof.

Table 2

Number of rows between Batten U and Batten O		Roof tile type	Measurements [mm]						
			A	Ü	K	Total spacing D	Batten spacing LA	Overlap	
Modules	Roof tile							Dead plate - Tile ²⁾	Tile - Tile
1	7	Topas 11V	150	0	0	2,387	341	132	104
		Optima	150	0	0	2,377	340	138	101
		Rubin 13V ¹⁾	150	0	0	2,377	340	132	95
2	12	Optima	150	0	0	4,019	335	138	106
		Rubin 13V ¹⁾	150	0	0	4,019	335	132	100
		Cosmos 12	150	0	0	4,009	334	132	92
3	17	Optima	150	0	0	5,661	333	138	108
		Rubin 13V ¹⁾	150	0	0	5,661	333	132	102
		Cosmos 12	150	0	0	5,651	332	132	93
4	22	Optima	150	0	0	7,303	332	138	109
		Rubin 13V ¹⁾	150	0	0	7,303	332	132	103
		Cosmos 12	150	0	0	7,293	331	132	94
		Finkenberger Pfanne	150	0	0	7,296	332	124	88

1) Water seam on the top roof tile end ground down on tiles on batten U
 2) Above batten U

5.4 Horizontal module field dimensions

5.4.1 Horizontal module field dimensions

Figure 4 shows the horizontal layout of the modules and the side groove of the SOLARWATT roofing frame using as an example a module field with 3 adjacently placed modules.

Measurement H is derived from the module-covering width 1.015 mm including the installation spacing of 2 mm between the modules.

This installation spacing should be created using two

spacers which are already stuck onto the left side of each module.

Module field standing seam F is the spacing between the standing seams of the roofing frame side groove and at the same time the outermost limit for the roof tiles.

Table 3 on page 14 shows the measurements for module fields with a width of 12 modules.

Figure 4

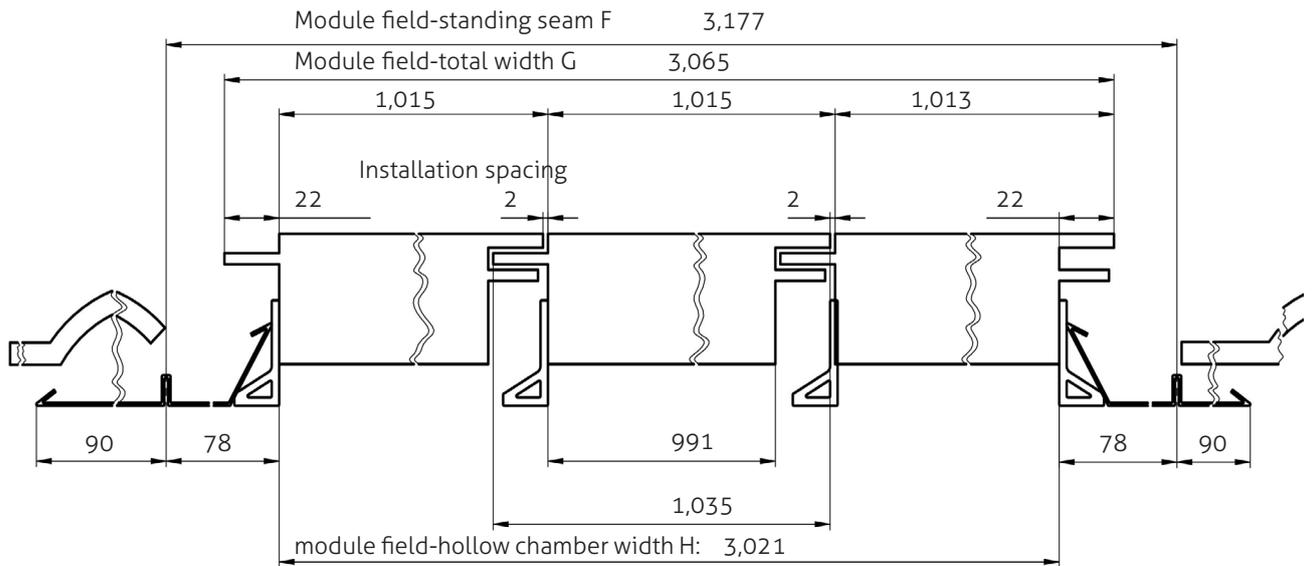


Table 3

Number Modules	1	2	3	4	5	6	7	8	9	10	11	12
	Measurements [mm]											
Hollow chamber width H	991	2,006	3,021	4,036	5,051	6,066	7,081	8,096	9,111	10,126	11,141	12,156
Total Width G	1,035	2,050	3,065	4,080	5,095	6,110	7,125	8,140	9,155	10,170	11,185	12,200
Standing seam width F	1,147	2,162	3,177	4,192	5,207	6,222	7,237	8,252	9,267	10,282	11,297	12,312

5.4.2 Side batten ends in transition between module and tile field

The following figures show the necessary batten projections on the left and right side of the module field.

Table 4

Batten number	Figure	Batten projection on the left and right edge of the module field
6 - aluminum guide rail	Figure 5	170 mm
2; 3; 4; 5	Figure 6	> 190 mm for support and fastening of side grooves and for screw fitting with mounting bracket
2; 3; 4; 5	Figure 7	≥ 50 mm for firm screw seat in wood batten when screwing in the mounting bracket.
Support board 98x20 On batten 1	Figure 8	Board edge recessed about 20 mm from module edge
1	Figure 8	> 220 mm for safe support of the lower corner plates
7.1 – 7.3		> 190 mm for safe support and fastening of the upper corner plates

Figure 5

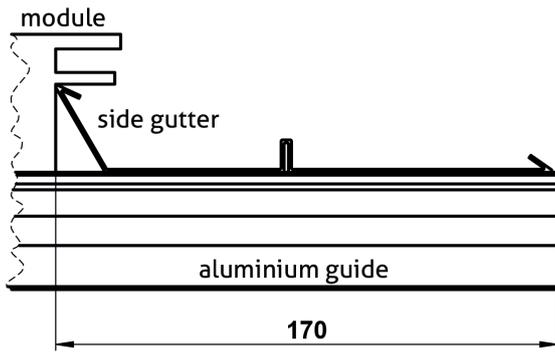


Figure 6

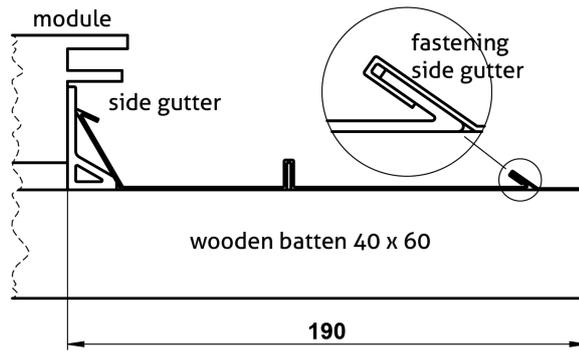


Figure 7

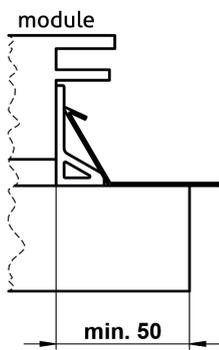
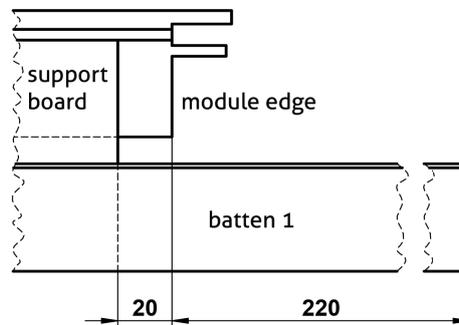


Figure 8



6 Step-by-step installation

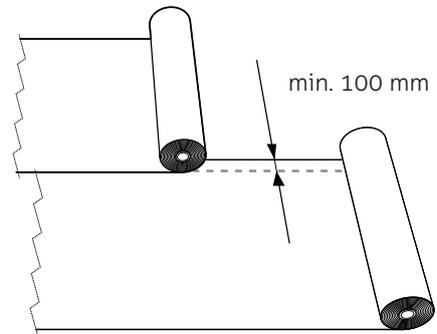
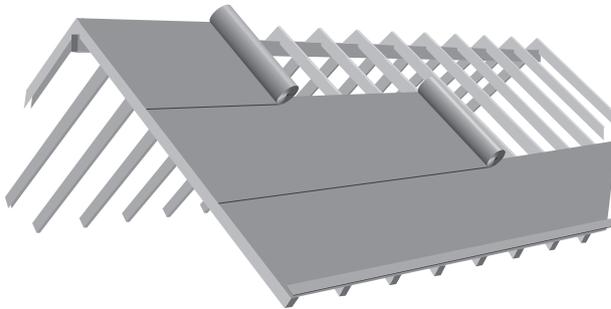
6.1 Sarking membrane

The sarking membrane supplied with the delivery is laid parallel to the eaves. Fasten the sheets free of crimps and wrinkles. The minimum overlap both for the height and side overlaps is 100 mm.

Stick the height overlaps using the adhesive strip on the sheet edges (back and front) and the side overlaps under the counter batten. The printed side of the sarking membrane is the top side and must show upwards in the laying.

Fix the sarking membrane covered in the area of the height and side overlaps or under the counter batten (on the roof rafters) with staples or flat-headed nails. The final fastening is done by applying the counter batten. Stricter requirements for fastening counter battens apply in the module field area. These are described in Chapter 6.2.3 on page 17 and are implemented after the roof battens have been attached.

Figure 9



! NOTE

Impermeability of the sarking membrane

When using the supplied sarking membrane and penetrating fastening (nails, screws) no nail sealing strip is required.

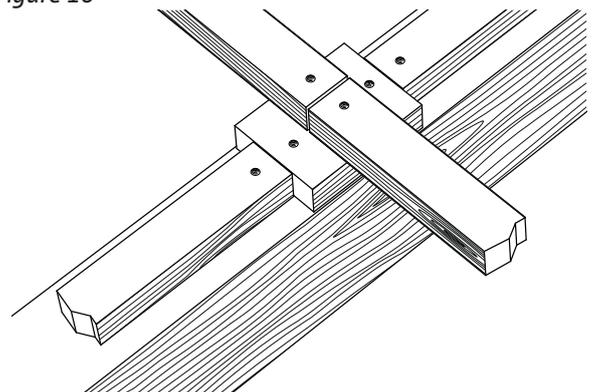
6.2 Roof battening

The battening is installed in the orientation of eave to ridge.

6.2.1 Special case batten joints

If batten joints are required in the module area, please ensure that the spacing between the joint surface and screw point is wide enough. To ensure static stability, a lateral doubling on the batten joint or the solution as illustrated in the diagram with a flat-head screw 6 x 80 is required.

Figure 10



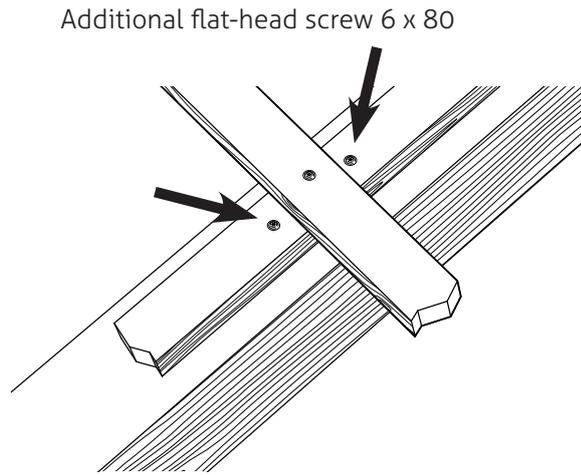
6.2.2 Fastening battens

In the module area the horizontally running battens are to be screwed tightly into the counter batten with a flat-head screw 6 x 80.

6.2.3 Extra fastening of battens

On all battens into which mounting brackets for modules are screwed, in order to secure static stability, all counter battens must also be screwed immediately above and below the roof battens with flat-head screws 6 x 80 (spacing of screws to cross batten at least 20 mm). This affects battens 2, 3, 4 and 5 (12; 13; 14; 15) (22; 23; 24; 25) (32; 33; 34; 35) etc.

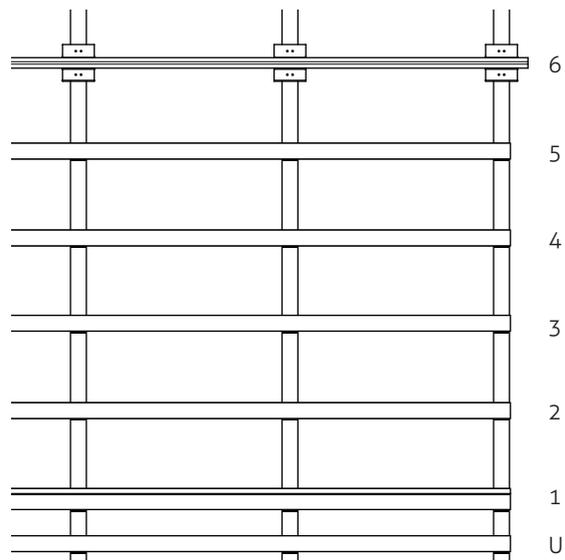
Figure 11



6.2.4 Start of installation with batten U and batten 1

First install batten U according to your layout plan. As spacing A refers to the top edge of supporting board 98x20, batten 1 itself must be attached at a spacing of "A MINUS 20 mm" to batten U (see Figure 13 on page 18).

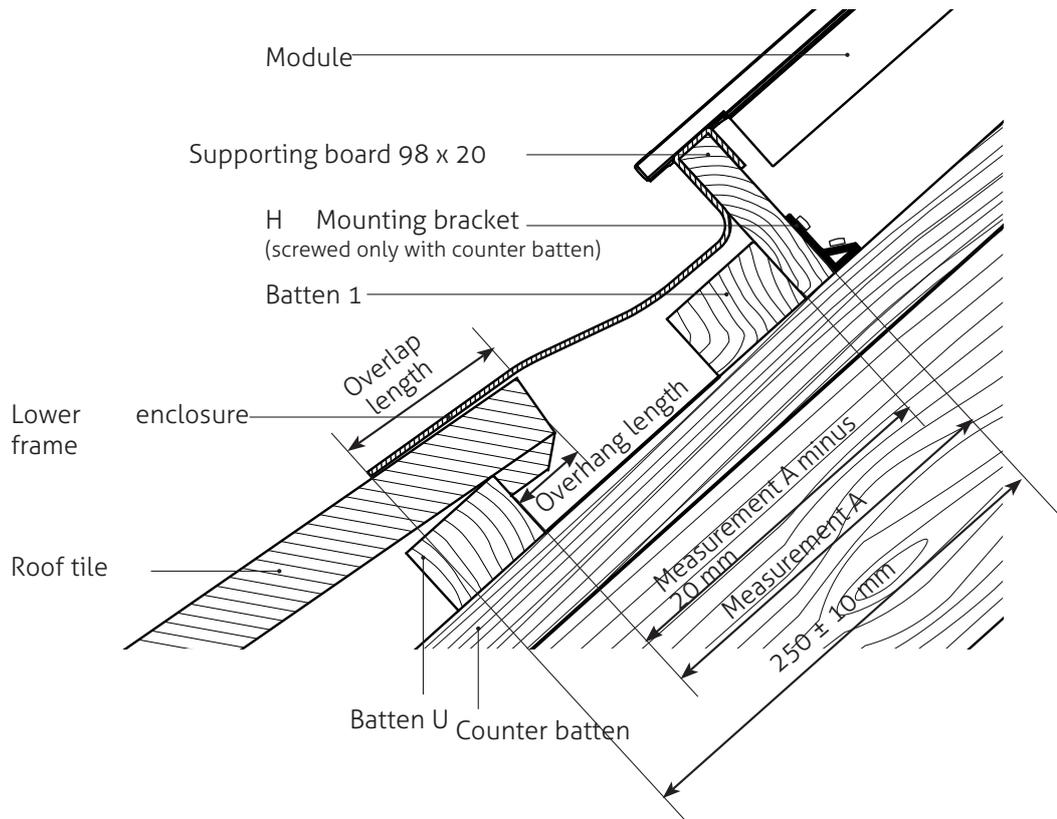
Figure 12



6.2.5 Fastening support board 98x20

The support board is used for the eave-side module construction of the lowest module row. Position the board closely to the top side of batten 1 and fix it with the supplied mounting brackets (see chapter 8.1 Delivery scope on page 30). The mounting brackets are to be fastened on each counter batten of the module field with 2 wood screws 6 x 60. To avoid a split of the supporting board and a conflict with the batten screwing, the mounting brackets must not be screwed to the supporting board.

Figure 13



6.2.6 Laying battens 2; 3; 4; 5

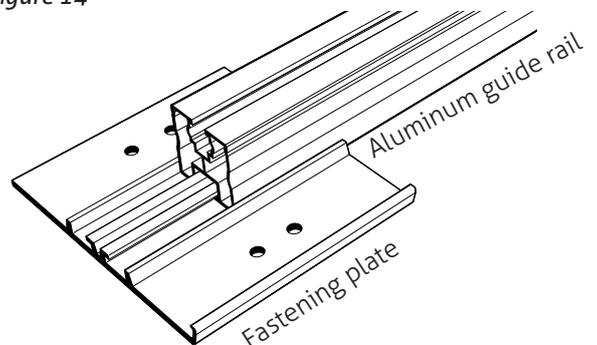
These battens are to be arranged and fastened according to the measurement and tolerance information in Figure 3 on page 10 (or also in Table 1 on page 11).

6.2.7 Laying batten 6: Aluminum guide rail 40x40 on the fastening plate

The first aluminum guide rail must be laid with a spacing of 1.642 mm to the top edge of the supporting board 98 x 20. Here it is essential that the tolerance requirement +/- 5 mm be observed because the aluminum guide rail is also used as a measurement reference point for the module row laid out above (see Figure 3).

The aluminum guide rails are fixed with fastening plates which are fastened centrally to the counter battens with wood screws 6 x 60.

Figure 14

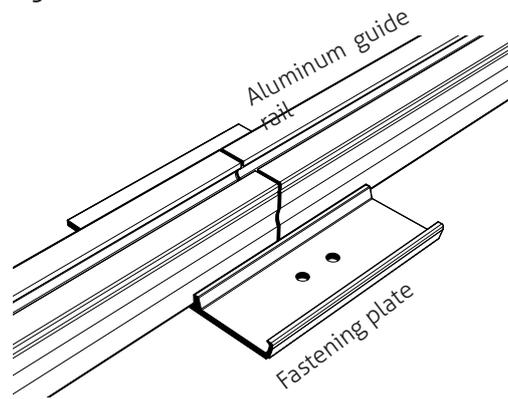


NOTE

You must first push the required number of fastening plates onto the aluminum guide rail before you start fastening the counter batten!

Transitions from one aluminum guide rail to the others are made in the counter batten area.

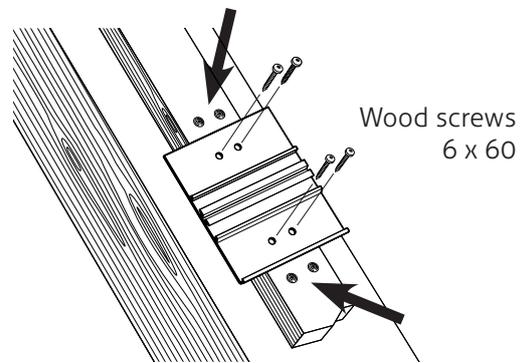
Figure 15



The counter battens under the fastening plates are also to be fixed with 4 flat-head screws 6 x 80 (see Figure 16).

Figure 16

Flat-head screw 6 x 80



6.2.8 Laying battens for further module rows

For the battening of module row 2, the top of the already laid aluminum guide rail 6 of module row 1 is used as a reference surface.

Battens 12, 13, 14, 15 and aluminum guide rail 16 are to be arranged in the same way and must be fastened as

described in Chapters 6.2.6 to 6.2.8.

Complete the module field in the same way for all other module rows up to the aluminum guide rail on the top module field end.

6.2.9 Laying battens for further the top enclosure frame and batten O

Lay the battens for the top enclosure frame according to the information provided by the supplier of your enclosure frame. When using the SOLARWATT roofing frame the measurements for the roofing frame are stated in the installation instructions.

Batten O is positioned with a total distance D to batten U (see Chapter 5.3).

6.3 Module installation

It is recommended to install modules from the bottom right to top left (see Figure 32 on page 25). The system can also be installed by starting in the middle or outside left in the lowest row.

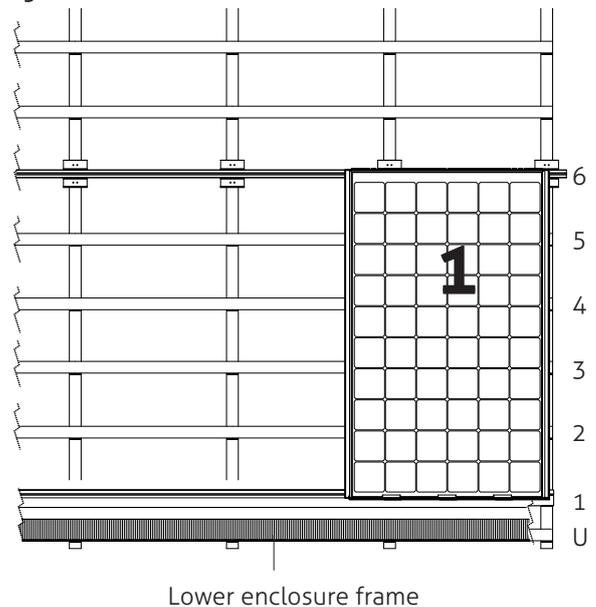
IMPORTANT

The SOLARWATT EasyIn System design is based on the roof tile system. Therefore the overlaps between the modules and the connections to the enclosure frame and to the roof tiles must be implemented very carefully.

NOTE

Before you can install any modules in the lowest module row, the relevant lower enclosure frame must already be laid there. Please always follow the relevant installation instructions for the enclosure frame.

Figure 17



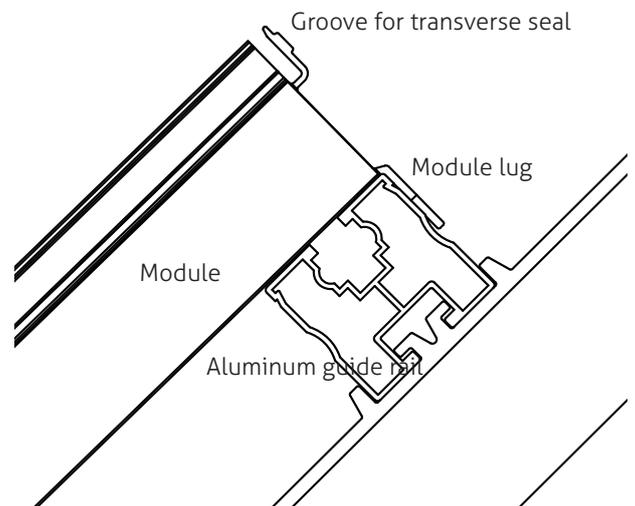
6.3.1 Positioning the first module

Mount the first module on the lowest aluminum guide rail on the bottom right edge of the module field (see Figure 17). Move the module into the desired position. The module lug should lie flat on the aluminum guide rail over the total length (see Figure 18).

NOTE

For the subsequent electrical wiring prepare the connecting cable above the module or next to the roof batten.

Figure 18



6.3.2 Fastening the first module of the lowest module row

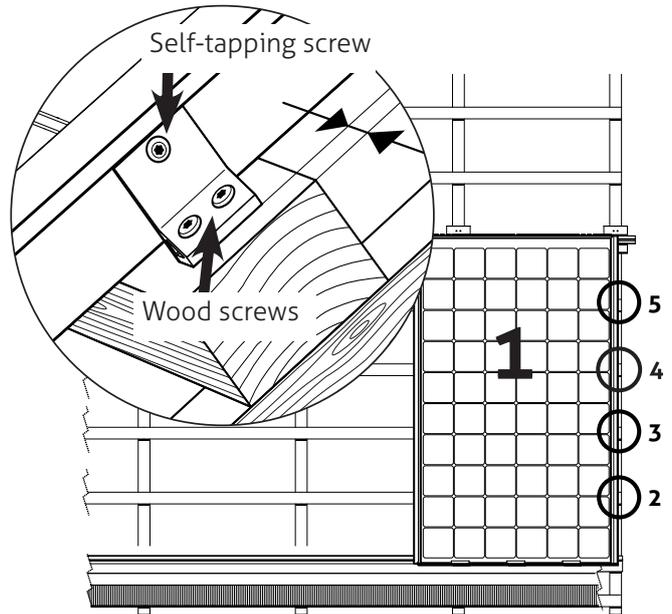
Battens 2, 3, 4 and 5 are initially attached on the external side of the module field. Then position a mounting bracket with the short side on one of the battens, push this up to the module frame, orient centrally and screw the long bracket end to the frame end with a self-tapping screw 5.5 x 35.

Then check once again the position of the module and enclosure frame and correct these if necessary.

Now screw in the mounting bracket to the batten using two wood screws 6 x 60 (with the steepest angle possible between screw and roof batten).

Screw in the two other mounting brackets in the same way (see Figure 19).

Figure 19

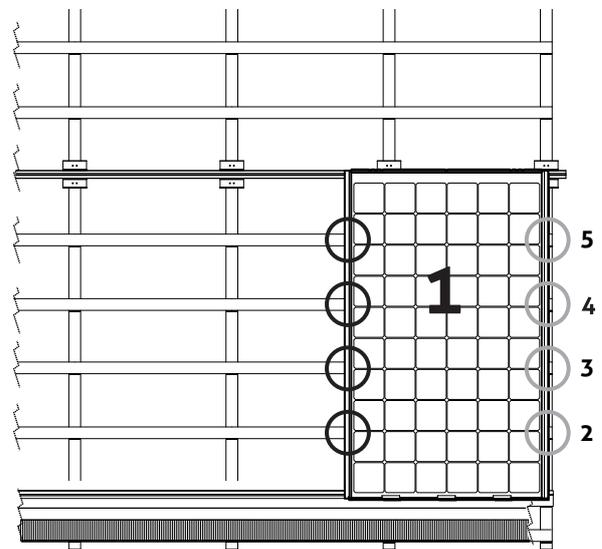


! IMPORTANT

Please ensure when fixing that the wood screws **are not overlaid** as this could displace the mounting bracket and move the module away from its adjusted position.

Now fasten the first module of the row in the same way on the other module side to battens 2, 3 and 5 (see Figure 20).

Figure 20



! IMPORTANT

Every first module of a module row laid must be fixed on the right and left side of the module with mounting brackets to the roof battens. All subsequent modules of the same module row are only attached on the free remaining side.

6.3.3 Module earthing

For its earthing each module must be screwed into the aluminum guide rail at one of the two marked positions using a self-tapping screw 5.5 x 35.

IMPORTANT

The screw fitting should always be on the module side where the mounting bracket is located.

The electrical connections between the aluminum guide rails and the earthing connection of the entire system are based on the system design.

6.3.4 Transverse seal installation

Start the insertion of the transverse seal after fastening the first module of the module row. To this end, lay a **transverse seal clip** on the top right module corner in the transverse seal groove (see Figure 22). The **nib** of the transverse seal clip (see Figure 23) should protrude into the **small notch** on the transverse seal groove in order to fix the position of the transverse seal clip. Then gradually press the transverse seal itself into the stipulated groove at the top module edge.

IMPORTANT

Make absolutely sure that the transverse seal is neither pulled nor expanded during insertion; it should be inserted **by pressing it slightly down**. If installed when expanded the transverse seal will become shorter, causing gaps and leakages on both sides.

Individual **clamping lugs** are hollowed out in the groove for the transverse seal. Use a hammer to gently tap on each of the two clamping lugs on both module sides to fix the transverse seal with as little deformation as possible (see Figure 22 and Figure 24).

Figure 21

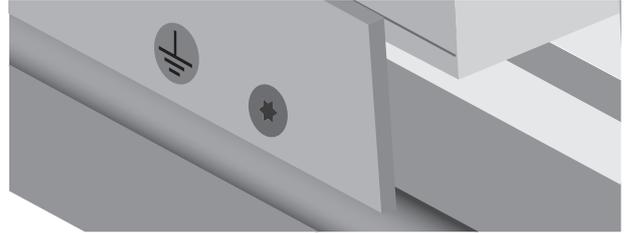


Figure 22

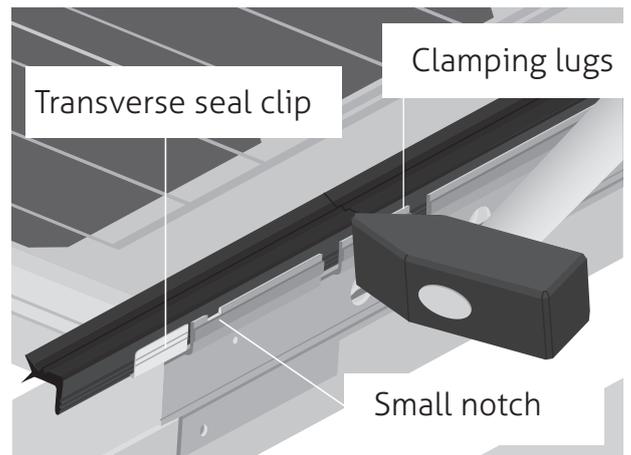
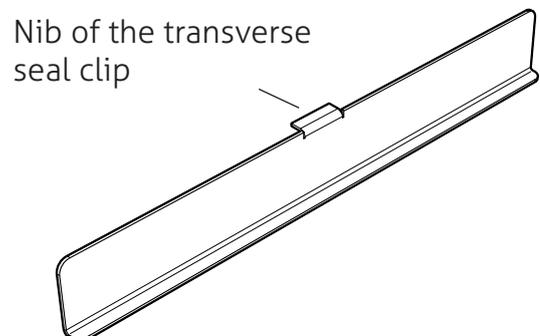
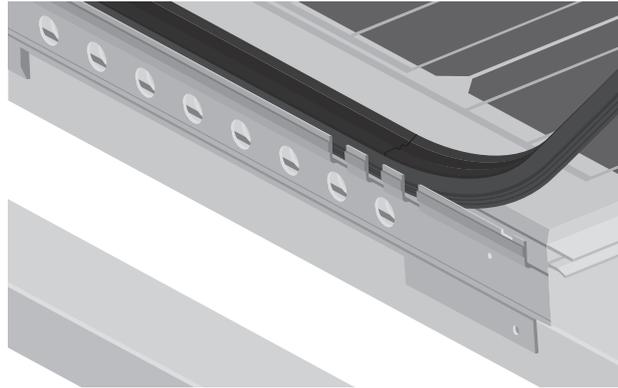


Figure 23



The remaining length of the transverse seal can be laid in the meantime on the last fitted module.

Figure 24



The transverse seal is to be measured in such a way that it extends over several modules. The transitions from module to module are each supported by using a transverse seal clip (see Figure 25 and Figure 26).

Figure 25

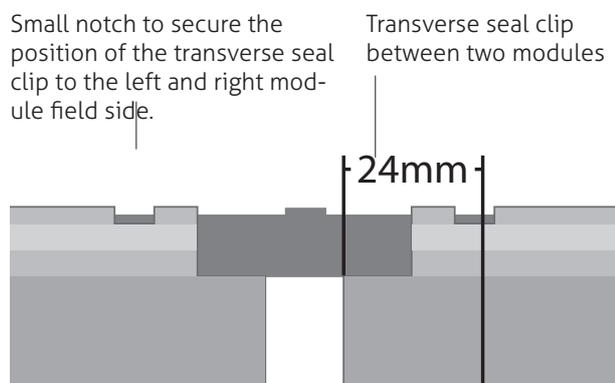
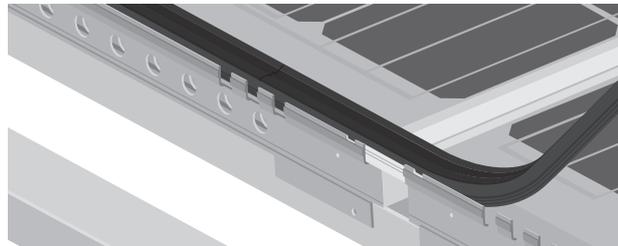
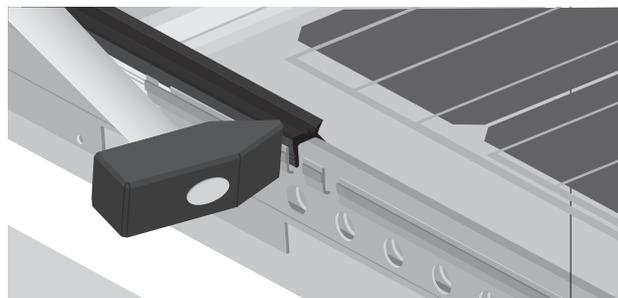


Figure 26



If a transverse seal (approx. 6.4 m) is not long enough within a module row, then it is to be shortened near its end so that the transition from one transverse seal to the next can be made in one of the two clamp areas per module each with two clamping lugs.

Figure 27

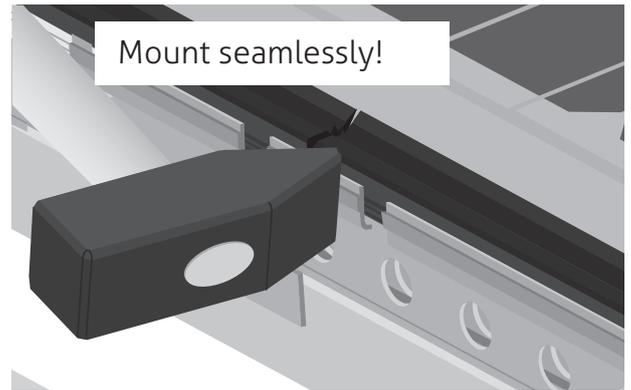


Both seal ends are fully pressed tightly against each other there and each fastened with a clamping lug.

! IMPORTANT

Ensure also that the new seal is **inserted pressed down** and ensure that at the joining point no new gap has formed.

Figure 28



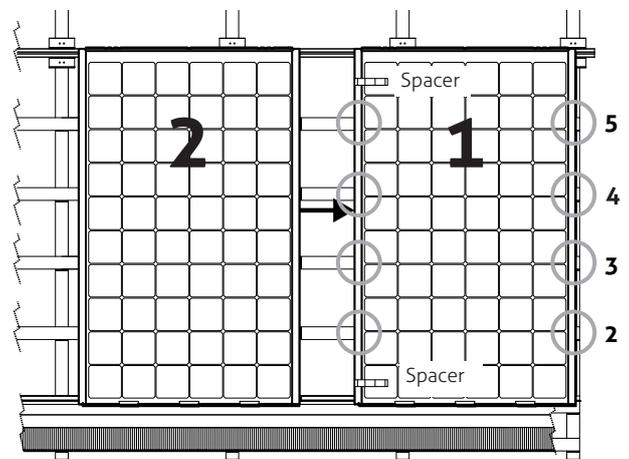
6.3.5 Fastening the second module of the lowest module row

Mount module 2 on the left next to the already installed module 1 on the same aluminum guide rail and do the electric wiring.

Then module 2 is pushed into module 1 as far as possible until it reaches both the affixed spacers of module 1 (expansion gap 2 mm).

Module 2 is held on the right side by module 1 and is fixed in position with only the 4 mounting brackets on the left side. The mounting brackets are mounted in the same way as for module 1.

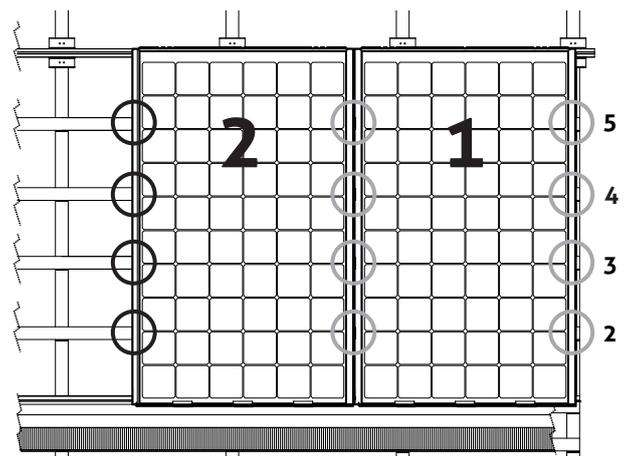
Figure 29



! IMPORTANT

When fixing the wood screws, make sure that the screws **are not overtightened** in order to avoid displacing the mounting bracket and moving the module away from its adjusted position.

Figure 30



You must now **remove the spacers from module 1.**

! NOTE

The remaining spacers can only be removed subsequently with difficulty.

! IMPORTANT

Check that the 2 mm expansion gap between the two modules actually exists.

Lay and fasten the transverse seal on module 2 as described in Chapter 6.3.4.

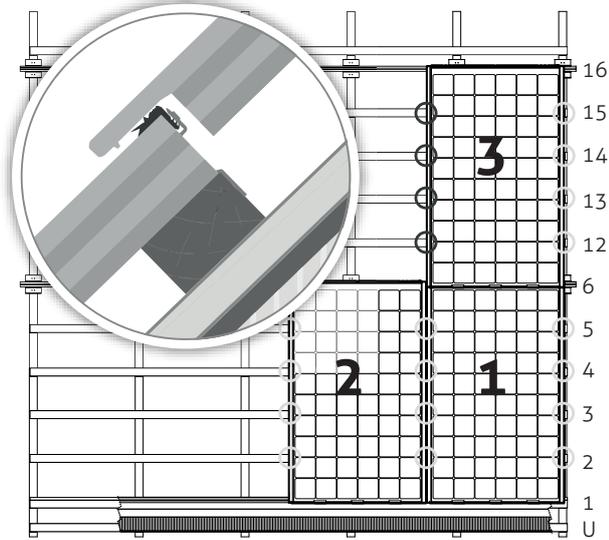
6.3.6 Installing the third module

It is advisable that the third module to be laid is the first module of module row 2. This is first of all mounted on the aluminum guide rail of module row 2 and then laid overlapping on the transverse seal of module 1 (see Figure 31).

Now do the electrical wiring.

Then align the right edge of module 3 to module 1 positioned underneath. Mount the mounting bracket, earthing connection and transverse seal as described in Chapters 6.3.2 to 6.3.4.

Figure 31



6.3.7 Installation of the next modules

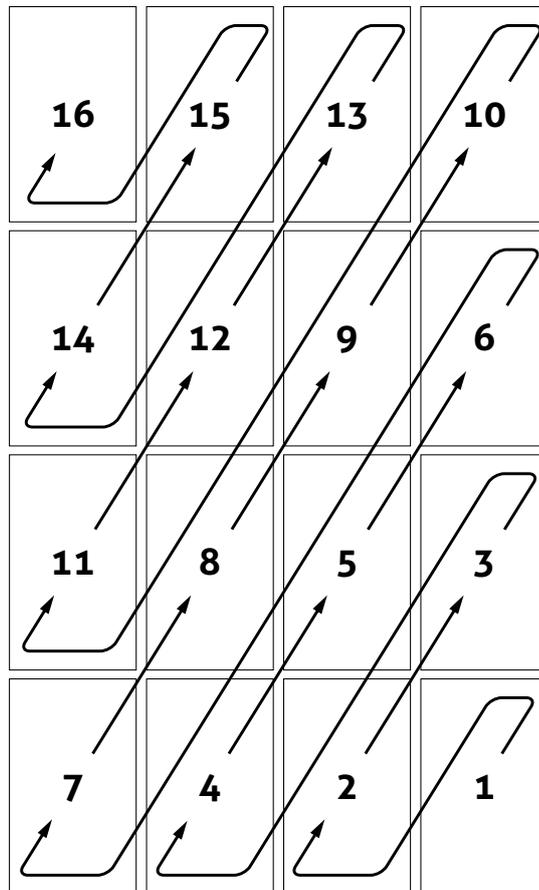
It is advisable to install the modules in a specific installation sequence (1-16), which is shown in the figure with an example of a module field with 4 x 4 modules. The installation starts in the bottom right corner, with Module M1 and progresses, as stated, up to Module M34 in the top left corner.

Take care when building the lowest module row to ensure the correct installation of the lower enclosure frames, especially with the enclosure frame of the two bottom corners at Module M1 and M4.

Ensure that all installation steps are duly performed in the installation of each further module:

- Connection of the cable
- Insert the module up to the spacer in the previously laid module
- Screw in every module to the mounting brackets, do not overtighten the wood screws
- Then remove the spacer and check the expansion gap
- Implement the module earthing
- Lay the transverse seal, always pressed

Figure 32



6.4 Module connection at the top module field edge

Figure 33

Shorten all projecting ends of the laid transverse seals on the left and right side of the module field around 3 mm next to the ends of the transverse seal clip.

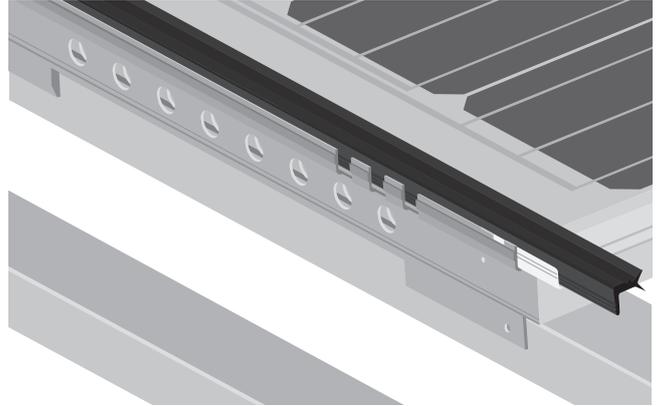


Figure 34

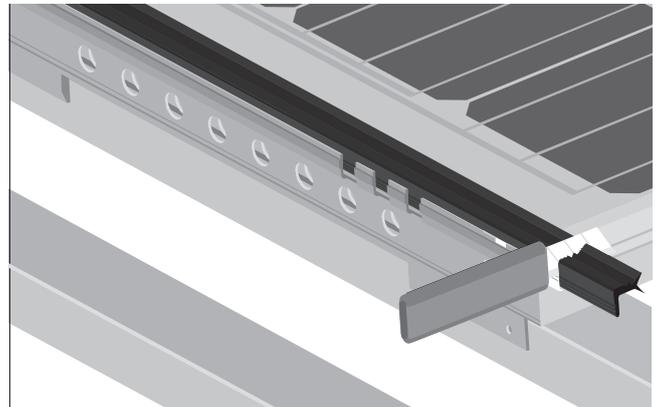
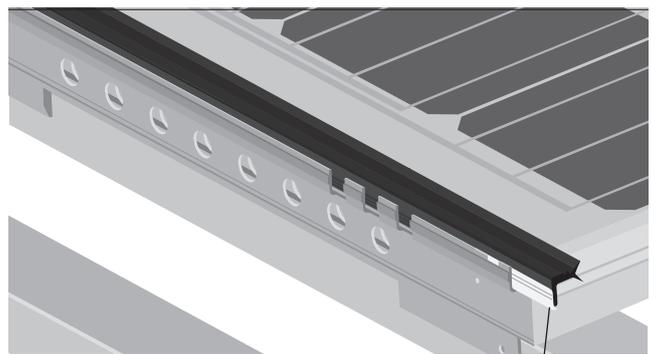


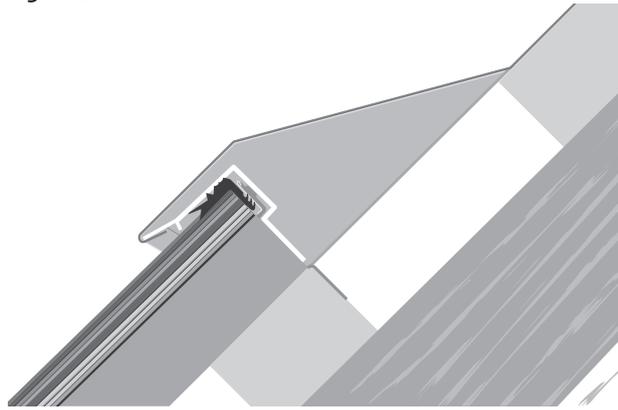
Figure 35



3 mm projection of the transverse seal over the transverse seal spacer

Then fit the respective left and right edge module in the topmost module row with the **top-long module connection (6 holes)**. These connections must each be mounted and staggered respectively to the outer module field edge. The modules lying in between receive the **top-short module connection (3 holes)**, which is laid out centrally to the modules.

Figure 36



Press on the top module connections until they are "locked" onto the transverse seal and module edge then screw these in each with 3 metal sheet cutting screws 5.5 x 35.

Now install the side roof enclosure frame.

When using the SOLARWATT roofing frame please consult the installation instructions for the roofing frame.

! NOTE

For your own roof enclosure frame you will find design proposals in Chapter 9.5.

6.5 Side module connection

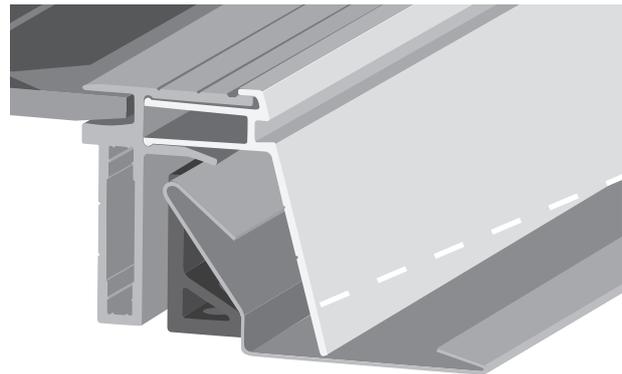
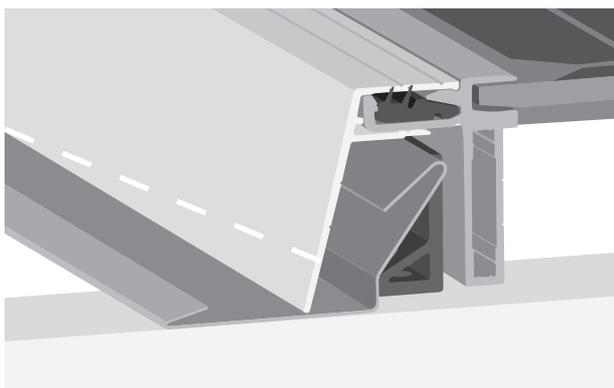
After the roof side enclosure frames (grooves) have been mounted, the side module connections on the long sides of the edge modules are attached.

To this end, on the side module connections for the lowest module row, their lower ends generally need to be

adapted to the roof groove by separating a correspondingly narrow strip from the module connections.

Start by attaching the lower row of the module field respectively to the lower edge of the module and then work your way upwards.

Figure 37



Cut for adaptation to roof-side gutters in lowest module row

6.6 Cable ducting through the roof

Piping bushings and cable bushings are to be attached above or to the side of the area covered with the EasyIn modules. A cable bushing between the track supports is also possible. However only one cable (max. 6 mm² cross-section) can be bushed and the distance to the other cables must be at least 10 cm.

In addition, no mounting parts must be located within or below the area covered with the EasyIn modules, unless these integrated parts are not located in the water-bearing layer.

For the cable bushing different variants are possible.

Common variants are shown below:

Cable bushing on the roof ridge side of the system above the sarking membrane through the ventilation gap on the roof ridge

- Use of the ventilation gap on the roof ridge is possible (see Figure 38)

Cable bushing through the inward and outward projecting conduit in the area of the under-membrane, especially in the case of a converted attic

- Rainproof and windproof bonding (system adhesive tapes) with the sarking membrane or under-membrane.
- Pipe penetrates heat insulation layer on the room side
- and is air-sealed with a system adhesive tape system to the vapor barrier.
- Closure of the conduit on the room-side and roof-side after completion of the cable bushing work.

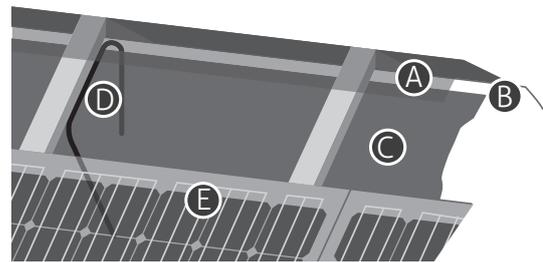
(see Figure 39)

Cable bushing between the track supports

- The cable is bushed inwards through the track supports which overlap at least 10 cm.
- Bushing of a max. one cable which must have a cable cross-section of a maximum 6 mm².
- If several cables are to be bushed inwards, then the distance between the cable bushing points must be at least 10 cm.

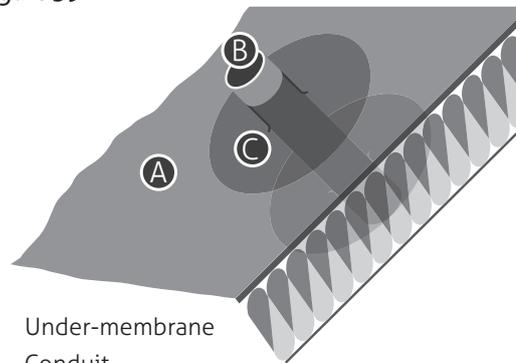
(see Figure 40)

Figure 38



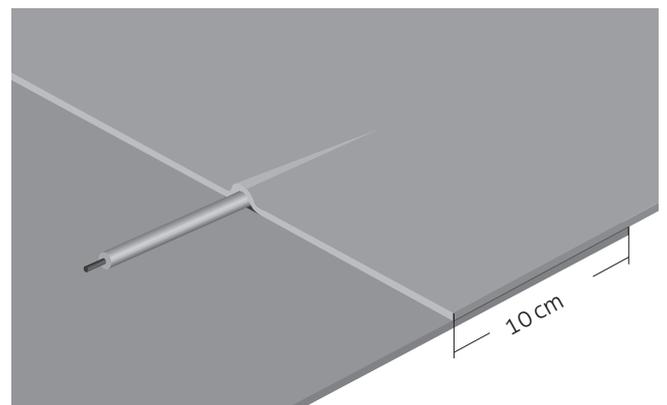
- | | | | |
|---|------------------|---|---------|
| A | Covering strip | D | Cable |
| B | Ventilation gap | E | Modules |
| C | Sarking membrane | | |

Figure 39



- | | |
|---|-------------------------------|
| A | Under-membrane |
| B | Conduit |
| C | Flexible system adhesive tape |
- Connection of the steam brake/air-tight layer room side as shown.

Figure 40



6.7 Installation of the roof top enclosure frame

After attaching all side module connections and the cabling, the roof enclosure frame on the top module field edge is now installed. Please consult the installation instructions of the respective manufacturer.

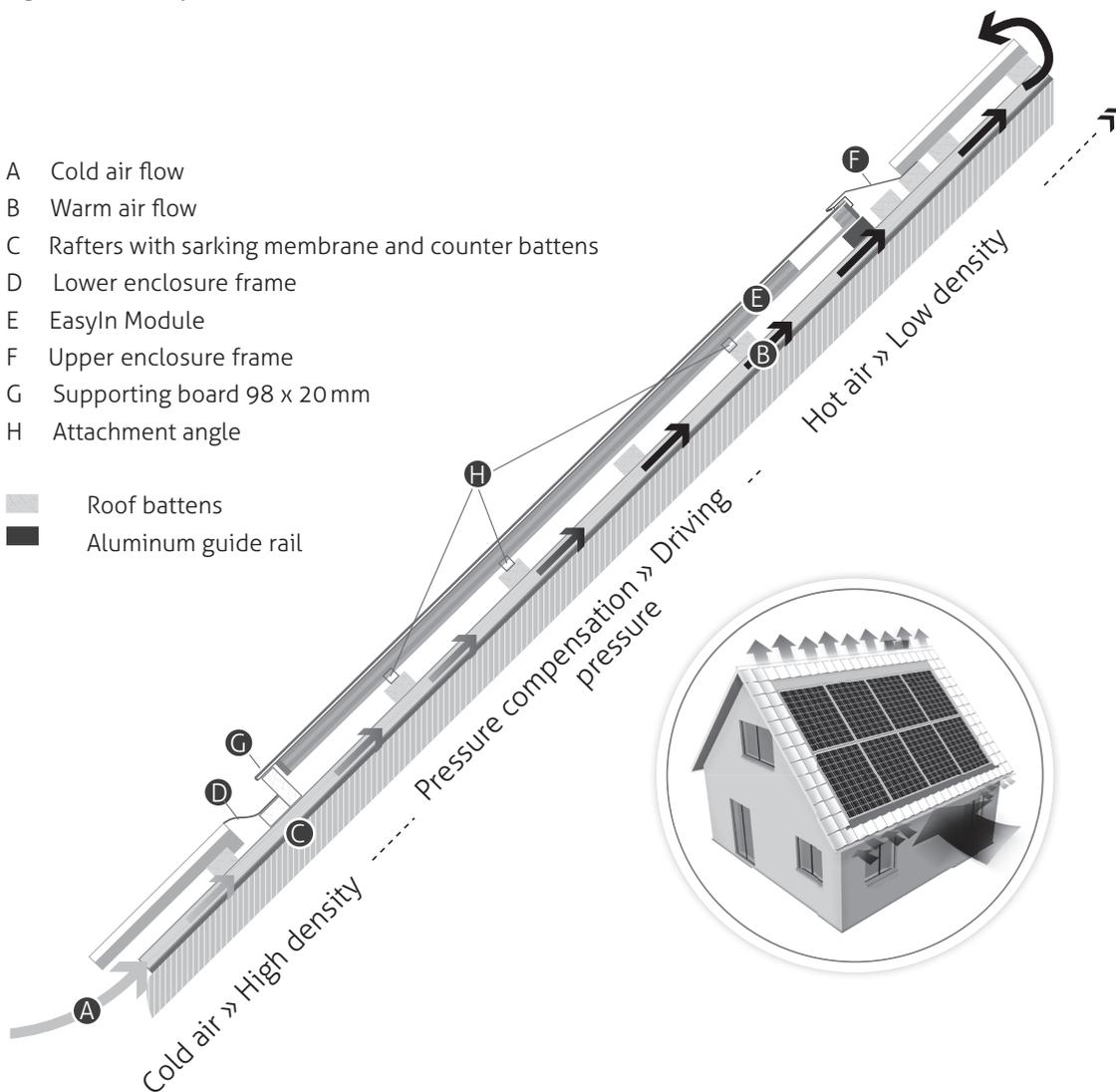
7 The principle of rear ventilation

In combination with a properly designed roof construction, the EasyIn system guarantees optimal ventilation at the rear of the roof surface. Air inlets located in the eaves allow (e.g. through bird guards) ambient air to flow inwards between the EasyIn System and the roof sub-construction.

As the air heats up it rises due to its lower density, and escapes through the ventilation openings at the roof's ridge

or the ventilation tiles to be attached. Colder air (with higher density) is sucked in from below to compensate the pressure difference resulting from cold/warm air transition. This natural convection (=chimney effect) ensures that the SOLARWATT EasyIn system is cooled sufficiently guaranteeing optimum performance even at high temperatures.

Figure 41 (Principle illustration)



8 System components

8.1 Delivery scope

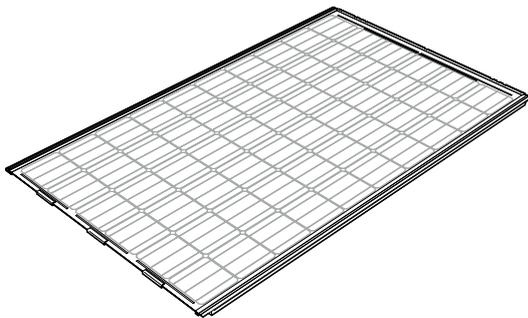
Check the delivery of the EasyIn system for completeness and correctness of all parts using the following parts diagrams and your parts list. Check that all delivered parts are in a due and proper condition.

! NOTE

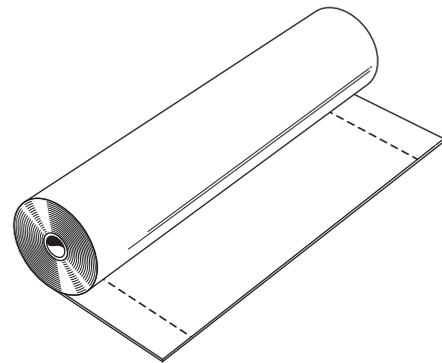
If a SOLARWATT EasyIn roofing frame has been purchased, also check the delivery of the roofing frame for completeness and correctness of all parts using the insert sheets in the boxes. Also check that the version of the roof pitch that you require has also been delivered and whether all delivered parts are in a due and proper condition.

Figure 42

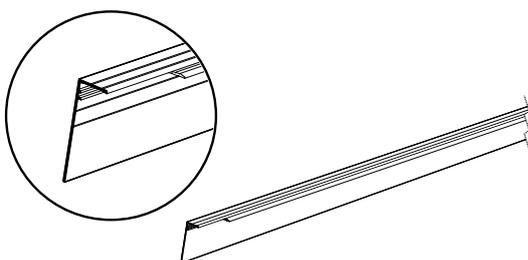
Solar module



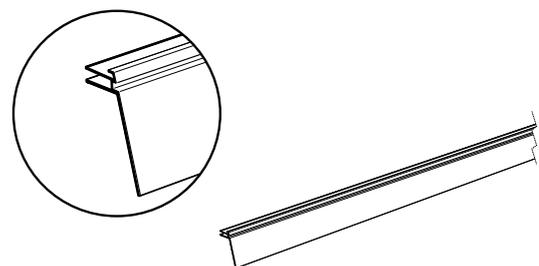
Sarking membrane



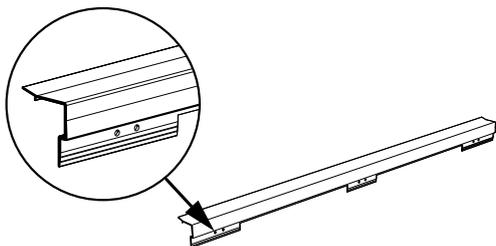
Module connection left



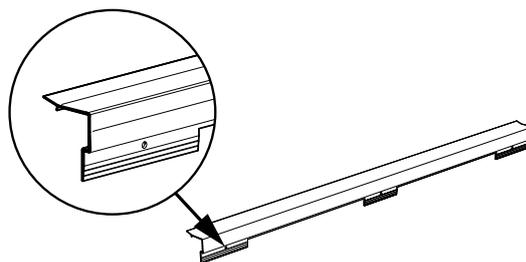
Module connection right



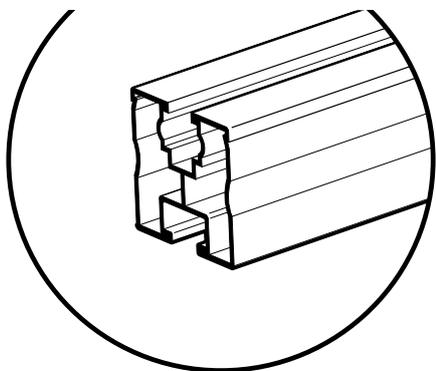
Module connection top long
(Only for modules in right and left module field corner)



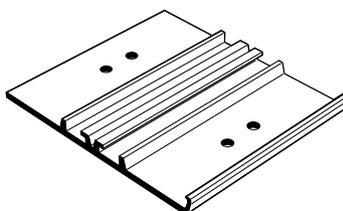
Module connection top short



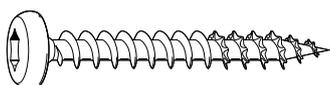
Aluminum guide rail



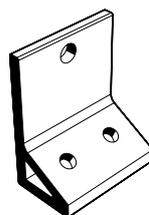
Fastening plate for aluminum guide rail



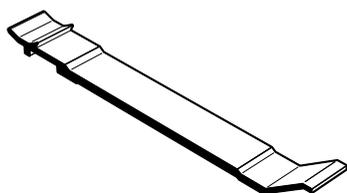
Wood screw 6 x 60



H Mounting bracket



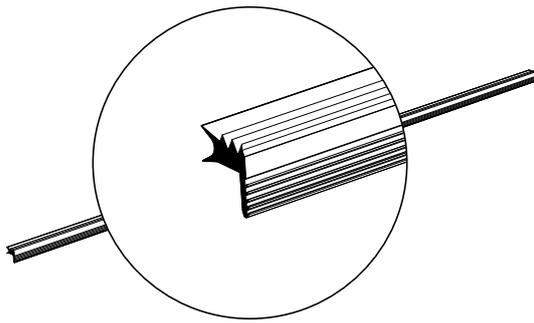
Spacer (on delivery 2x fixed to each module)



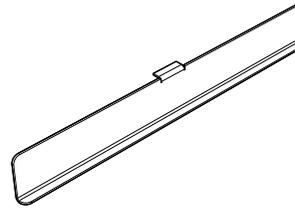
Self-tapping screw 5.5 x 35



Transverse seal



Transverse seal clip



8.2 Parts not included in the delivery scope

Figure 43

Roof battens and counter battens	40 x 60 mm ² (quality class S10 acc. to DIN 4074 Part 1, max. wood moisture content at time of installation 20%)
Supporting board	98 x 20 mm ² (max. wood moisture content at time of installation 20%)
Screws	Spax 6.0 x 80 round-headed full-threaded 4cut steel
Roof tile	Medium-profiled roof tiles with a max. configuration height of up to 50 mm and suitable cover length
Roofing frame	In the event of a customized solution

9.3 Total spacing D and LA for different roof tiles

Total Spacing D and LA for different models of roof tiles

valid for SOLARWATT-Roof frame 30-65° with B=180mm

A = 150mm; Ü = 0mm; K = 0mm

Model of roof tile	Roof tile rows between battens U and O	Maße /mm			
		Total Spacing D	LA	Overlap	
				dead plate-roof tile	roof tile-roof tile
Number of module rows: 1					
Actua 10	7 optimal	2426	347	122	127
Alegra 10 Eisenbg 1)		2402	343	142	127
Z10		2392	342	138	114
Modula 9 1)		2388	341	132	105
Topas 11V		2387	341	132	104
Optima		2377	340	138	101
Cosmos 13S		2385	341	129	99
Rubin 13V 1)		2377	340	132	95
Topas 13V		2362	337	142	93
Cosmos 12		2367	338	132	87
Frankfurter Pf.		2372	339	122	81
Finkenberger Pf.		2370	339	124	81
Harmonie		2355	336	129	74
Number of module rows: 2					
Actua 10	11	4068	370	122	104
Alegra 10 Eisenbg 1)		4034	367	142	103
Cosmos 11		4034	367	140	91
Cantus		4024	366	142	84
Optima	12 optimal	4019	365	138	76
Modula 9 1)		4020	335	132	111
Topas 11V		4029	336	132	109
Optima		4019	335	138	106
Cosmos 13S		4027	336	129	104
Rubin 13V 1)		4019	335	132	100
Topas 13V		4004	334	142	96
Cosmos 12		4009	334	132	92
Frankfurter Pf.		4014	334	122	87
Finkenberger Pf.		4012	334	124	86
Harmonie		3997	333	129	77
Cosmos 15		3984	306	129	101
Galant		4002	308	114	92
Number of module rows: 3					
Alegra 10 Narv 1)	16	5676	355	157	120
Turmalin		5706	357	127	118
Actua 10		5710	357	122	117
Z10		5676	355	138	101
Cantus		5666	354	142	96
Topas 11V		5671	354	132	91
Optima		5661	354	138	87
Rubin 13V 1)		5661	354	137	86
Cosmos 13S		5669	354	129	86
Topas 13V		5646	353	142	77

1) water seams grinded at the top of the roof tiles of batten U

Model of roof tile	Roof tile rows between battens U and O	Maße /mm				
		Total Spacing D	LA	Overlap		
				dead plate-roof tile	roof tile-roof tile	
Number of module rows: 3 (continuation)						
Modula 9 1)	17 optimal	5672	334	132	112	
Topas 11V		5671	334	132	111	
Optima		5661	333	138	108	
Cosmos 13S		5669	333	129	107	
Rubin 13V 1)		5661	333	132	102	
Topas 13V		5646	332	142	98	
Cosmos 12		5651	332	132	93	
Finkenberger Pf.		5654	333	124	87	
Harmonie		5639	332	129	78	
Cosmos 13S		18	5669	315	129	125
R13S			5664	315	130	123
Frankfurter Pf.			5656	314	122	106
Tegalit			5656	314	122	106
Planum			5651	314	127	106
Cosmos 15	5626		313	139	94	
Maxima	5646		314	115	89	
Galant	5644		314	114	86	
Tandem	5616		312	132	78	
Number of module rows: 4						
Turmalin	21	7348	350	127	125	
Actua 10		7352	350	122	124	
Cantus		7308	348	142	102	
Mikado		7314	348	132	98	
Optima		7303	348	138	93	
Rubin 13V 1)		7303	348	137	92	
Cosmos 13S		7311	348	129	92	
Modula 9 1)		22 optimal	7314	332	132	114
Topas 11V			7313	332	132	113
Optima			7303	332	138	109
Cosmos 13S			7311	332	129	108
Rubin 13V 1)			7303	332	132	103
Topas 13V			7288	331	142	99
Cosmos 12			7293	331	132	94
Finkenberger Pf.	7296		332	124	88	
Harmonie	7281		331	129	79	
Cosmos 13S	7311		318	129	122	
R13S	23	7308	318	130	120	
Frankfurter Pf.		7298	317	122	103	
Tegalit		7298	317	122	103	
Planum		7293	317	127	103	
Cosmos 15		7268	316	139	91	
Maxima		7288	317	115	86	
Galant		7286	317	114	83	
Tandem		7258	316	132	74	

9.4 Batten spacings under module field for 1-4 module rows

For spacings measured from the top side of supporting board 98 x 20 see Figure 3 on page 10

Batten spacings below module field for 1-4 module rows supplemented by spacings for battens 7.1 - 7.3 for SOLARWATT Roof frame

Spacings measured from the top side of the support board 98x20, see Fig. 1

Module-row	Batten-Nr.	Batten-Tolerance +/- mm	Spacing /mm from top side of support board	
			30-65°	22-29°
1	7.3	see Fig.	1947	2072
	7.2		1842	1962
	7.1		1762	1822
2	6	5	1642	
	5		20	1315
	4		140	985
3	3	20	660	
	2		20	328
	Support board OS		0	

Module-row	Batten-Nr.	Batten-Tolerance +/- mm	Spacing /mm from top side of support board		
			30-65°	22-29°	
2	7.3	see Fig.	3589	3714	
	7.2		3484	3604	
	7.1		3404	3464	
3	16	5	3284		
	15		20	2957	
	14		140	2627	
1	13	20	2302		
	12		20	1970	
	6		5	1642	
2	5	20	1315		
	4		140	985	
	3		20	660	
3	2	20	328		
	Support board OS		0		

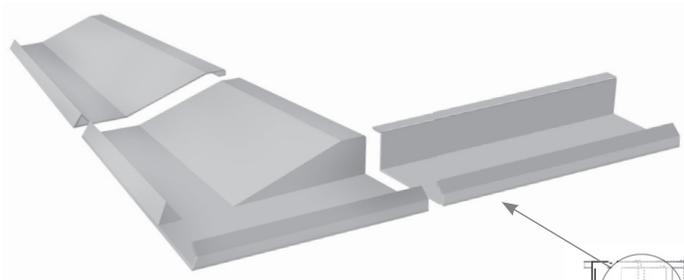
Module-row	Batten-Nr.	Batten-Tolerance +/- mm	Spacing /mm from top side of support board	
			30-65°	22-29°
3	7.3	see Fig.	5231	5356
	7.2		5126	5246
	7.1		5046	5106
2	26	5	4926	
	25		20	4599
	24		140	4269
1	23	20	3944	
	22		20	3612
	16		5	3284
2	15	20	2957	
	14		140	2627
	13		20	2302
3	12	20	1970	
	6		5	1642
	5		20	1315
1	4	140	985	
	3		20	660
	2		20	328
Support board OS		0		

Module-row	Batten-Nr.	Batten-Tolerance +/- mm	Spacing /mm from top side of support board	
			30-65°	22-29°
4	7.3	see Fig.	6873	6998
	7.2		6768	6888
	7.1		6688	6748
3	36	5	6568	
	35		20	6241
	34		140	5911
2	33	20	5586	
	32		20	5254
	26		5	4926
1	25	20	4599	
	24		140	4269
	23		20	3944
2	22	20	3612	
	16		5	3284
	15		20	2957
3	14	140	2627	
	13		20	2302
	12		20	1970
1	6	5	1642	
	5		20	1315
	4		140	985
2	3	20	660	
	2		20	328
	Support board OS		0	

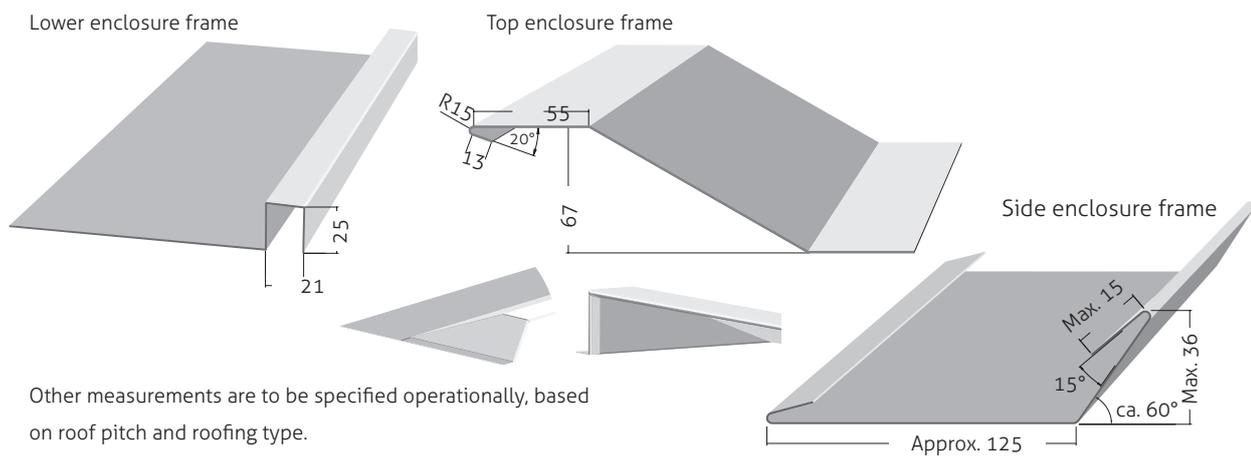
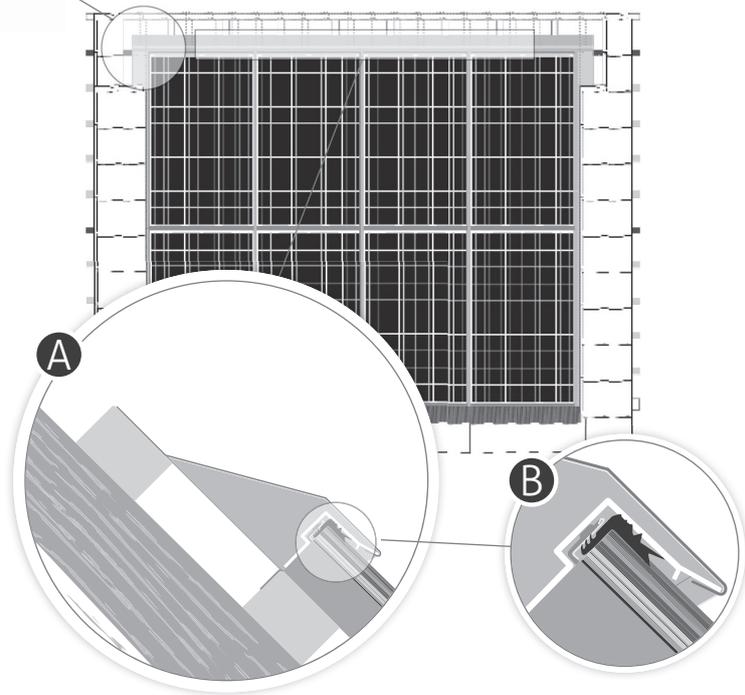
Alu-guides 6; 16; 26 and 36

For battens 4; 14; 24 and 34 with wider tolerance in some cases the nearest battens from the roof tile area can be pulled through in the module area, see chapter 5.3.2

9.5 Design guidelines for your own enclosure frames



- A Cross-section metal sheeting in the top frame groove
- B Module connection top



9.6 Warranty Conditions

(Rev. 009 | 07/2019)

A Scope

1. The Warranty for SOLARWATT Solar Modules of the glass-glass generation pursuant to these Warranty Conditions (hereinafter „Warranty Conditions“) of SOLARWATT GmbH (hereinafter „SOLARWATT“) apply in addition to any of the End Customer’s statutory rights arising from product defects. These Warranty Conditions do not affect any of the End Customer’s statutory rights arising from product defects. Such rights continue to exist regardless of whether a Warranty Claim event is given or asserted.

2. These Warranty Conditions apply to the following Solar Modules of the glass-glass generation:

Vision 60M high power	Vision 36M glass
Vision 60M style	EasyIn 60M style
Vision 60M black	
Vision 60M build	
Vision 60M	
Vision 60P	

(hereinafter jointly referred to as „Solar Modules“ or individually as „Solar Module“).

3. The Warranty pursuant to these Warranty Conditions applies to Solar Modules which the End Customer has purchased in countries in which SOLARWATT does not have country-specific warranty conditions for Solar Modules in place. All warranty conditions for Solar Modules are available at <http://www.solarwatt.com>. The Warranty pursuant to these Warranty Conditions shall remain unaffected even if the End Customer transfers the Solar Modules to and operates the Solar Modules in a different country afterwards.

4. The Warranty pursuant to these Warranty Conditions applies to Solar Modules installed in areas with an officially listed maximum possible snow load of up to 8.1 kN /m² (8,100 Pa). The warranty applies –except for EasyIn 60M style modules- even if the maximum permitted pressure loads on the modules indicated in the installation instructions are exceeded for the selected installation variant.

5. These warranty conditions apply exclusively to solar modules and not to complete systems from SOLARWATT. For complete systems, SOLARWATT or a third-party contracted by SOLARWATT provides the respective end customer with additional deliveries or services, such as installation services. Any SOLARWATT warranties for such complete system are subject to separate warranty conditions.

B Product Warranty

SOLARWATT provides the Warranty pursuant to these Warranty Conditions exclusively to End Customers who have acquired Solar Modules for their own use and not for the purpose of further sale or any other type of commercial exploitation (“End Customer”). SOLARWATT guarantees the End Customer pursuant to these Warranty Conditions that the Solar Modules are free from material and manufacturing defects which influence the functionality of the Solar Modules („Product Defects“) for a duration of thirty (30) years from the date of the invoice to the end customer for the purchase of the solar modules (“Warranty Term“) (together “Product Warranty“).

C Performance Warranty

SOLARWATT guarantees the End Customer pursuant to these Warranty Conditions:

- During the first (1st) year from the date of the invoice to the end customer for the purchase of the solar modules, the output of the Solar Modules shall not decrease to less than 97 % of the nominal output of the Solar Module as indicated by

SOLARWATT on the respective Solar Module minus a tolerance range of 5 % under Standard Test Conditions (irradiance 1,000 W/m², spectral distribution AM 1.5, temperature 25±2° C, hereinafter „STC“);

- From the beginning of the second (2nd) year until the end of the twenty-ninth (29th) year from the date of the invoice to the end customer for the purchase of the solar modules, the output of the Solar Modules shall not decrease by more than 0.345%, per year, of the nominal output of the Solar Module as indicated by SOLARWATT on the respective Solar Module minus a tolerance range of 5% under STC;

- During the thirtieth (30th) year from the date of the invoice to the end customer for the purchase of the solar modules the guaranteed output of the Solar Modules is at least 87% of the nominal output on the Solar Module as indicated by SOLARWATT minus a tolerance range of 5% under STC; (jointly “Performance Warranty“, Product Warranty and Performance Warranty jointly “Warranty“).

D SOLARWATT Warranty Services

1. If one of the Warranty claim events indicated in Section B or C arises during the respective Warranty Term, SOLARWATT shall – at its own discretion –

a) repair the Solar Module on site at the End Customer’s location,

b) repair the Solar Module at SOLARWATT’s facility or that of a third party,

c) supply an additional Solar Module to the End Customer or

d) exchange the Solar Module with a replacement module. On receipt of a replacement module by the End Customer, the ownership of the original Solar Module is transferred to SOLARWATT. For replacement modules, the remaining Warranty Term of the relevant Solar Module applies exclusively. Insofar as the Solar Module originally supplied by SOLARWATT was not or is no longer manufactured in serial production, an equivalent module shall be supplied as replacement or additional module.

2. If SOLARWATT repairs the Solar Module at SOLARWATT’s or a third party’s facility pursuant to Section D.1. or supplies an equivalent replacement module pursuant to Section D.1, SOLARWATT will engage a carrier who will collect the affected Solar Module from the End Customer’s location.

3. The Warranty pursuant to these Warranty Conditions covers the transport costs for the shipment of the affected Solar Module, a replacement or additional module as well as material and labor costs (personnel costs for repairs) for the Warranty service. SOLARWATT grants to the End Customer a flat rate payment of € 150.00 per system (i.e. photovoltaic system with a single grid connection) and Warranty claim event, plus € 25.00 for each affected Solar Module for the costs of the dismantling of the affected Solar Module and the installation of the replacement or additional modules in total; any further costs shall be borne solely by the End Customer. Costs for measurements and for assessments by qualified experts (e.g. if SOLARWATT rejects a Warranty claim event or if the End Customer cannot conduct such measurements personally) must be coordinated and aligned with SOLARWATT before the End Customer incurs such costs. Only in that case these costs will be covered by SOLARWATT.

4. If the End Customer asserts a Warranty claim under these Warranty Conditions and it turns out that there is no valid Warranty claim event, SOLARWATT reserves the right to invoice the End Customer for any costs incurred for the provided Warranty services, provided that the End Customer knew

or gross negligently did not know that no valid Warranty claim event was given.

5. If a Warranty service of SOLARWATT is unsuccessful, SOLARWATT is entitled to repeat the same form of Warranty service or to provide a different service, unless this is unreasonable for the End Customer.

E Exclusion of the Warranties

1. The Warranty does not extend to Solar Modules that are impaired, damaged or destroyed as a result of
 - a) being improperly stored or transported by the End Customer or a third party,
 - b) not being installed or, if applicable, uninstalled or reinstalled, in accordance with the SOLARWATT installation instructions and the recognized good engineering practices,
 - c) being operated in a manner inconsistent with the intended purpose and especially the instructions for operation in the assembly manual,
 - d) not being maintained properly, in particular not in accordance with the maintenance instructions in the assembly manual,
 - e) being improperly modified by the End Customer or a third party or being otherwise improperly manipulated, or
 - f) of force majeure (in particular lightning, fire or natural disaster). The insurance performance pursuant to the SOLARWATT Full Coverage remains unaffected in this respect.
2. Insignificant changes or changes in appearance, in particular bleaching and discoloration of cells shall not constitute a Warranty claim event pursuant to the Product Warranty pursuant to Section B. The Performance Warranty pursuant to Section C remains unaffected.
3. The Warranty is furthermore excluded if the End Customer manipulates or removes the serial number or type plate of the Solar Module.
4. The End Customer bears the burden of proof that the Warranty has not been excluded due to the aforementioned reasons. This does not apply to circumstances which lie within SOLARWATT's sphere of responsibility or that of SOLARWATT's vicarious agents.
5. The End Customer's Warranty claim is not valid if the notification period set forth in Section G.3 is exceeded unless the End Customer has not culpably exceeded this notification period.

F Transfer to a new owner

If the End Customer sells and transfers the title to the Solar Module on, this warranty is transferred to the new owner of the Solar Module to the extent of the remaining Warranty Term. The respective new owner is then considered the End Customer for the purposes of these Warranty Conditions. In this event, this Warranty expires for the prior End Customer.

G Provisions on the assertion of Warranty claims

1. Warranty claims can only be asserted to SOLARWATT in writing and by submitting a copy of the original invoice of the dealer/installer from which the solar module was purchased (without prejudice as to whether they are part of the SOLARWATT distribution network). For this purpose, the complaint form for end customers is available online at <http://www.solarwatt.com>. Further documents (e.g. photos, records, etc.) must be provided at SOLARWATT's request.
2. The existence of a Warranty claim event due to the spontaneous breakage of the glass without any external influences or due to a reduced output of a Solar Module must be verified by an expert appraisal performed by SOLARWATT, a third party commissioned by SOLARWATT or an independent testing in-

stitute approved for module certifications in accordance with IEC 61215.

3. If an obvious Warranty claim event occurs, the End Customer must bring a claim in respect of this Warranty claim event as soon as possible and in any event no more than three (3) months after discovery of the Warranty claim event. Claims received after this time may be considered at SOLARWATT's sole discretion.

Recognizable transport damages should be reported using the claim form for transport damages, available from www.solarwatt.com.

H Notice for EasyIn 60M style solar modules

The EasyIn 60M style solar modules with the additionally supplied and/or optional SOLARWATT installation components to be purchased (seals, roof integration, enclosure frame) must be installed correctly and professionally according to the respective installation instructions by the respective installer for protection from rain.

I Limitation of liability

1. Any claims for damages or expenses against SOLARWATT irrespective of the legal basis (contract, tort or any other area of law) out of or in connection with the Warranty pursuant to these Warranty Conditions or Warranty services are excluded. SOLARWATT shall in no event and irrespective of the legal basis be liable to pay damages to the End Customer for loss of profit or revenue, loss of use, loss of data, cost of capital, down-time costs, cost of substitute goods, property damage external to the Solar Modules and any damage or loss arising out of such damage or any special, incidental, indirect or consequential damage. This also applies if such damage occurs at a third party's premises. The insurance performance pursuant to the SOLARWATT Full Coverage remains unaffected in this respect.
2. The aforementioned limitations of liability do not apply if SOLARWATT is liable pursuant to product liability law, in cases of willful intent, gross negligence, injury to life, body or health, or breach of material contractual obligations, i.e. obligations that actually enable the proper execution of the contract in the first place and which the End Customer can regularly and fully expect to be met. Compensation for breach of material contractual obligations is, however, restricted to foreseeable losses arising from the type of contract, provided no willful intent or gross negligence is involved, there is no injury to life, body or health, and SOLARWATT is not liable under product liability law.

J Final provisions

1. These Warranty Conditions are subject to German law to the exclusion of the conflict of laws and the United Nations Convention on Contracts for the International Sale of Goods (CISG). This does not affect the End Customer's rights under mandatory local law.
2. If any individual provisions of these Warranty Conditions are or become invalid, the validity of the remaining provisions remains unaffected.

GLASS-GLASS-MODULES

**PROFITABLE.
DEPENDABLE.
INDESTRUCTIBLE.**

Any Questions?

Your customer advisor or our technical support will be happy to help you.

SOLARWATT GmbH | Maria-Reiche-Str. 2a | 01109 Dresden | Germany
Tel. + 49 351 8895-0 | Fax + 49 351 8895-100 | info@solarwatt.com
Certified acc. to ISO 9001, 14001 und 50001 | BS OHSAS 18001:2007

www.solarwatt.com