



ubbink
S O L A R

Installation Manual

VarioSole



- On-roof
- Framed modules
- Vertical
- Horizontal
- Snow load zone I-IV
- Pantiles
- Plain tile
- Slate
- Bitumen shingles
- Eternite corrugated roofing sheets
- Ten years material guarantee

The VarioSole has been developed as a universal system for roof-mounting on pitched roofs. The use of patented aluminium base rails, the Clampnut technology and the telescopic mounting technology eliminates custom cutting and enables particularly fast installation.

Please read the installation instructions carefully before beginning installation. First familiarise yourself with the system components. During installation, and especially when working on the roof, be sure to observe the appropriate safety regulations and please pay attention to the relevant regulations of the Central Association of German Roofing Professionals (ZVDH).

Please check the current version of the installation manual under www.ubbinksolar.com.

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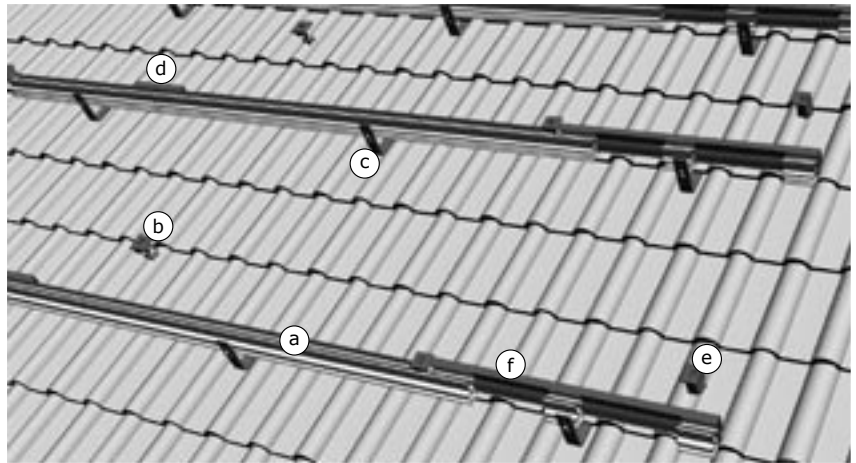
www.ubbinksolar.com

**We hope that you will enjoy using your VarioSole.
Your Ubbink Solar team**

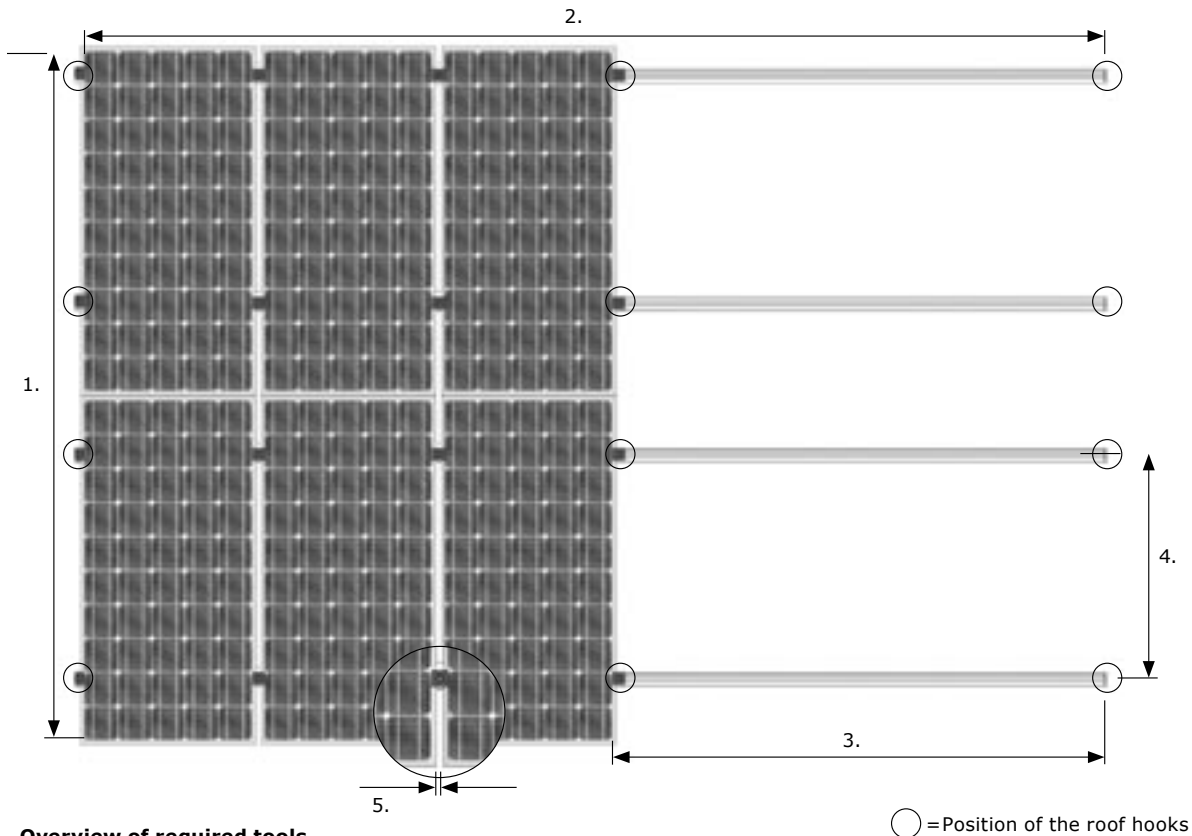
Installation preparation

Overview of system components

- a VarioSole rails 7/49 or 13/59
- b Inter-module clamp
- c Roof hook
- d Splice (7/49 and 13/59)
- e Module end clamp
- f Telescopic mounting (optional)



Planning the module area



Overview of required tools

- 6 mm Allen key
- Cordless drill
- Open-end spanner set 9, 10, 17, 19 mm (required only for mounting with hanger bolts)
- Torx-30 (AW 30) bit
- Angle grinder with stone disk
- Cord
- If necessary, timber to shim the roof hooks

1. Number of modules in the vertical direction x module height (please check also the installation manual of the manufacturer of the solar module)
2. Number of modules in horizontal direction x (module width + 18 mm) + 32 mm
3. Horizontal spacing of the roof hooks up to 2.5 m*
4. Vertical spacing of the roof hooks = approx. 1/2 to 3/4 of module height
5. Distance between the modules: 17 mm

* *Caution: Installations that are exposed to the wind or are located on the edge or corners of the roof may make it necessary to leave smaller spaces between modules.*

Installation

1



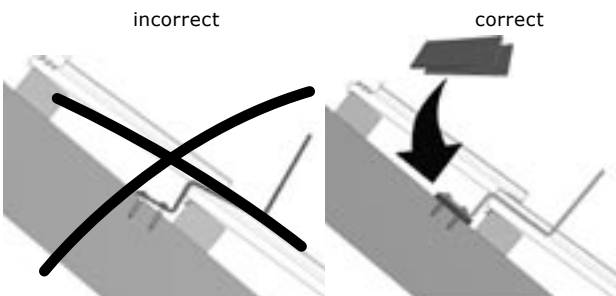
Determine the positions of the roof hooks according to your plans. Remove the roof tiles at the marked positions or, if possible, simply lift them up slightly.

2



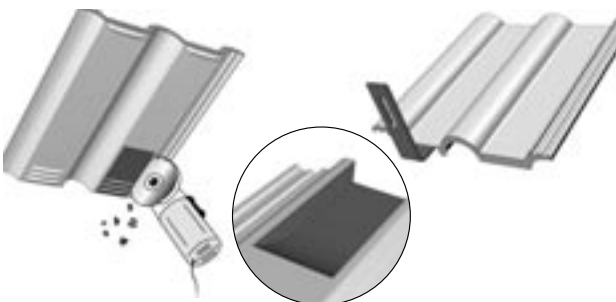
Fix the roof hooks to the rafter using three 6 x 80 mm wood screws.

3



The roof hook must not press against the roof tile. If necessary, shim the roof hook with wood.

4



If necessary, use an angle grinder or hammer to cut a recess in the tile that covers the roof hook at the point where the roof hook comes through so that the tile lies flat on the surface. If grooved tiles are used, it will also be necessary to cut a recess in the lower tile.

5

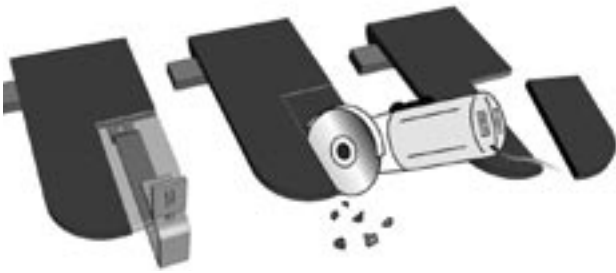
Important information



Caution! Do not use fitted roof hooks as a ladder, as this extreme point load could damage the tile below.

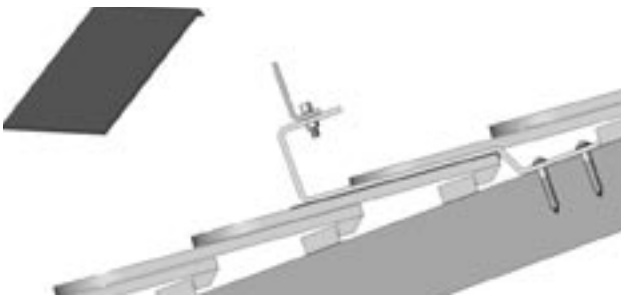
Installation

6 Variation for installation on plain tile roofs



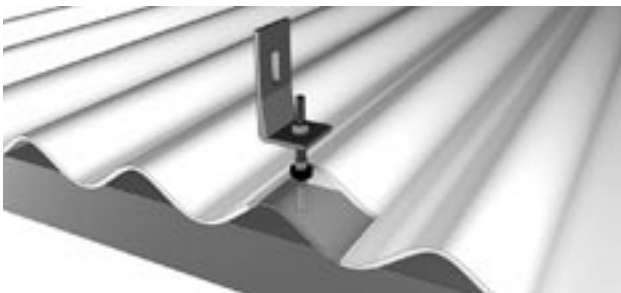
With plain tile roof cladding, a recess must be cut into the tiles around the position of the roof hook.

7



A titanium zinc metal sheet must be cut to fit on site, with an overlap of at least 20 mm around the recess, and installed under the roof hooks. Caution! Please take note of Figure 3.

8 Variation for installation on corrugated metal



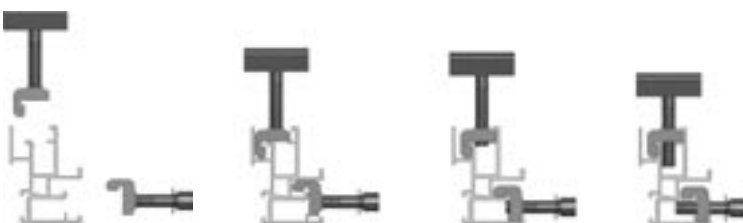
In the case of corrugated roof cladding, hanger bolts are used instead of roof hooks. Drill through the roof cladding at the planned location and screw the hanger bolts into the purlins. Then mount the L-brackets.

9



Cross-section of a hanger bolt installation. Take special care that the nut tightly fastens the sealing washer without damaging the roof cladding. When performing the installation, take care that the thread of the hanger bolt does not cover the long hole in the L-bracket.

10 Mode of operation of the Clampnut technology

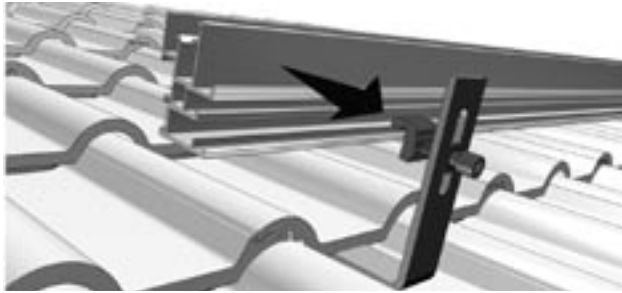


For easy use of the Clampnut, you must make sure that the thread of the screws does not project through the lower side of the Clampnut (max. flush). Position the Clampnut in the rail channel and fasten it loosely with 2 to 3 turns of the screw.

The screws can still be freely moved in the rail channel. Slide the screws to their final position in connection with the inter-module clamp, module end clamp or roof hooks/hanger bolts and fasten firmly (recommended torque is 8 Nm).

Installation

11 Installation of the rails on roof hooks or hanger bolts



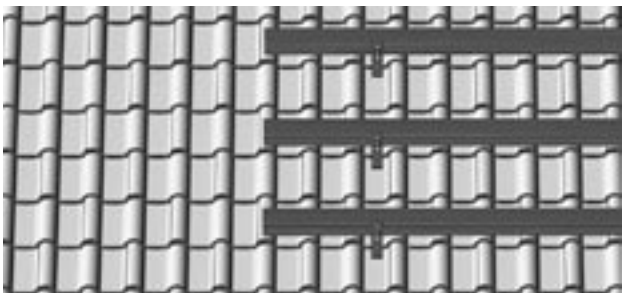
If your set of rails consists of rails of different lengths, always begin with the shortest piece. Install the framing for each row of modules loosely on the roof hooks, using an M8 x 25 mm Allen bolt, washers, retaining washers and the Clampnut (2 to 3 turns of the screw are adequate for loose installation). Please take note of Figure 10.

12



An optimum adjustment of the vertical and horizontal position can be made by taking advantage of the long hole in the roof hooks and the still loose connection of the Clampnut or T-head bolts in the rail. Please take note of Figure 13 below.

13



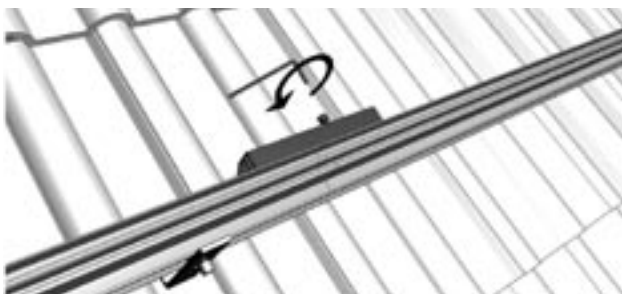
Position the first frame rails for each row and fasten them temporarily to the roof cladding using a cord. Tighten the Allen bolts or the nuts on the T-head bolts that are used to fasten the roof hooks/hanger bolts (recommended torque is 8 Nm). Please also pay attention to Figure 10.

14 Installation of the splice with base rails



To connect multiple rails together, slide the splices on the rear side of the pre-assembled rails halfway to the side. Fasten the first M8 Allen bolt firmly using the Allen key. Now slide the next rail segment into the splice.

15



Tighten the second second M8 Allen bolt using the Allen key. The connection is finished. An expansion gap at the rail joints is recommended. For this purpose, leave a gap about the same width as a finger between the rail joints and then loosely tighten the M8 allen bolt.

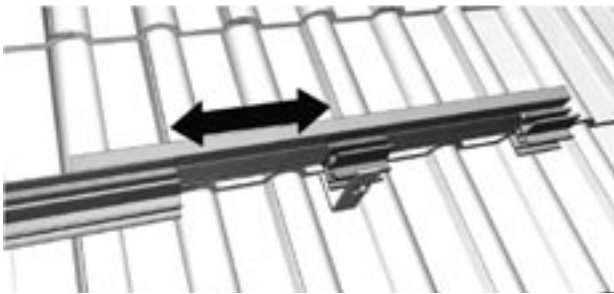
Installation

16 System planning using a telescopic mounting



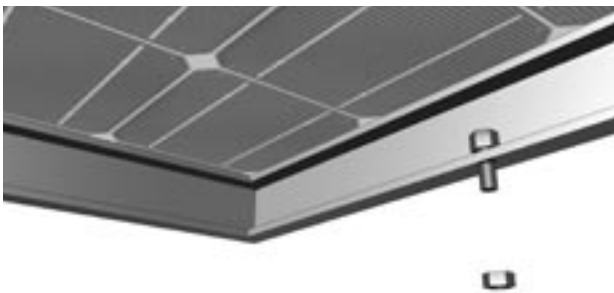
When planning a system using a telescopic mounting, please mount a telescopic mounting at the end of every row of rails. To do this, you insert the end of the telescopic mounting into the rail. The mountings can be adjusted to their correct positions later. For this reason, you should not yet fasten the M8 Allen bolt to the rear of the telescopic mounting (left side).

17



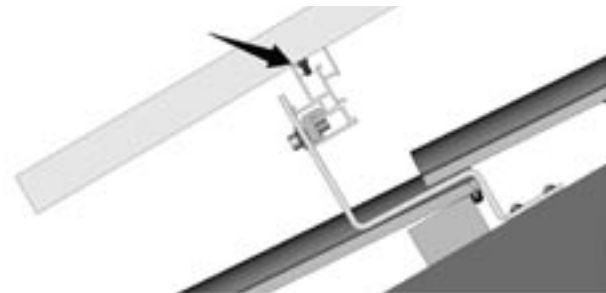
Fasten any remaining roof hooks to the movable rail element of the telescopic mounting. Please repeat steps 14 to 16 until all base rail rows in your system are installed.

18



Before installing the modules, add anti-slip protection to the lowest row of modules (horizontal rail installation only). To do this, fasten M6 x 20 mm bolts (with the shank downwards) to the lower mounting holes of the module frame using M6 nuts. When installing large modules (e.g. ASE250) M8 x 20 mm bolts must be used.

19



Place the first module of the bottom row so that the anti-slip protection sits in the rail channel of the lowest row of rails.

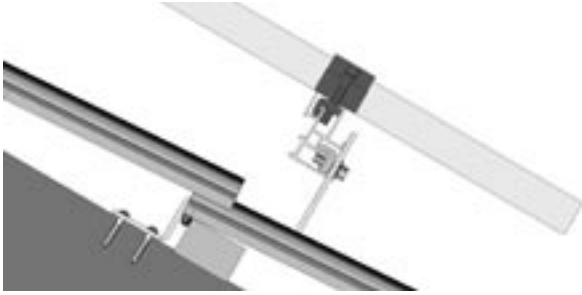
20



Slide the module end clamp tightly against the module and fasten tightly using the Allen bolt (recommended torque is 8 Nm). Please take note of Figure 10.

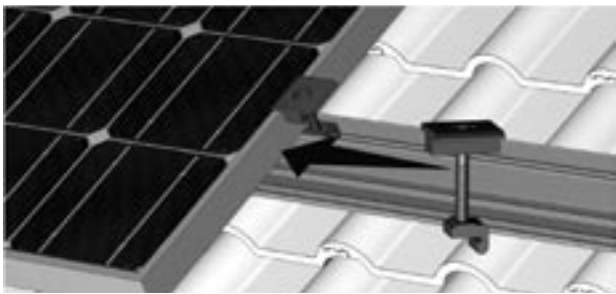
Installation

21



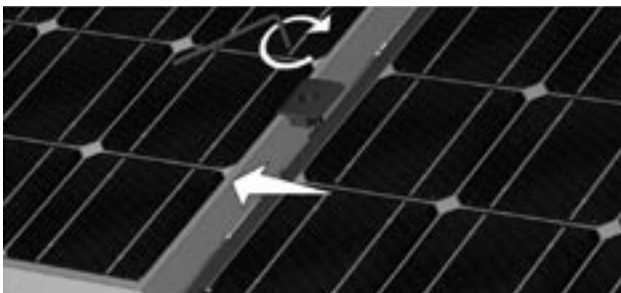
Cross-section through the module end clamp when installation step 20 has been correctly performed.

22



Slide the pre-assembled inter-module clamp into the rails from above, place it firmly against the module and fasten loosely (approx. 2 - 3 turns). Please also take note of Figure 10.

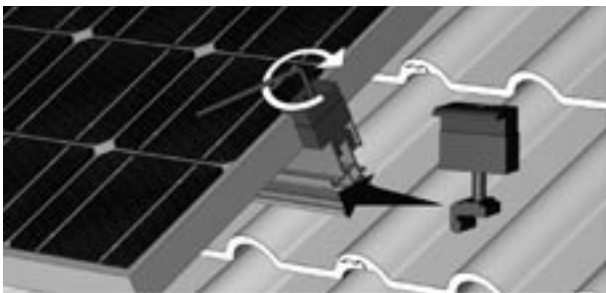
23



Now slide the next module against the previously installed module and tighten the inter-module clamp using the Allen key (recommended torque is 8 Nm). Take care that the anti-slip protection sits in the rail channel of the lowest row of rails. Please also take note of Figure 10.

24

Installation without telescopic mounting



If your system does not use a telescopic mounting, position the last module of the row in the base rail and fasten the module using the module end clamp (recommended torque is 8 Nm). For systems with telescopic mountings, please take note of Figure 25 below.

25

Installation using telescopic mounting



Position the telescopic mounting, which was loosely mounted in step 16, so that there is sufficient room for the last module, the last inter-module clamp and the end clamp (calculation: module width or length in mm + 43 mm). Now tighten the telescopic mounting using the Allen key (left side).

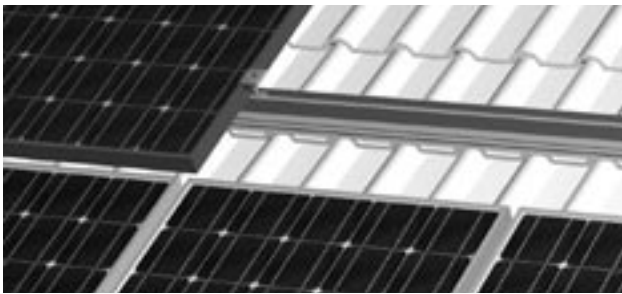
Installation

26



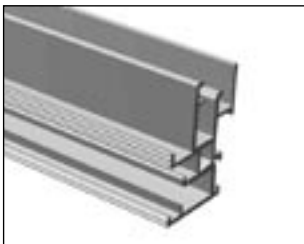
Place the last module in the row on the rails (with the first row of modules, take care that the anti-slip protection sits properly in the rail channel) and fasten the last inter-module clamp and the module end clamp using the Allen key (recommended torque is 8 Nm).

27



Now slide in the first module of the next row from above onto the corresponding module of the row beneath. A separation from the lower module can be maintained for optical reasons. An inter-module clamp can be used as a separator, so that the vertical and horizontal separation of the modules is identical. Continue mounting the modules as described in steps 20 to 26 until all modules are installed. The installation is finished.

Overview of system components



Rails 7/49 and 13/59



Splice 7/49 and 13/59



Telescopic mountings 7/49 and 13/59



Inter-module clamp with Clampnut



Module end clamp with Clampnut (for frame height 46 mm)



Module end clamp with Clampnut (for all frame heights except 46 mm)



Roof hook (double Roman tile)



Roof hook (slate)



Hanger bolt (corrugated metal)



Roof hook (plain tile)

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