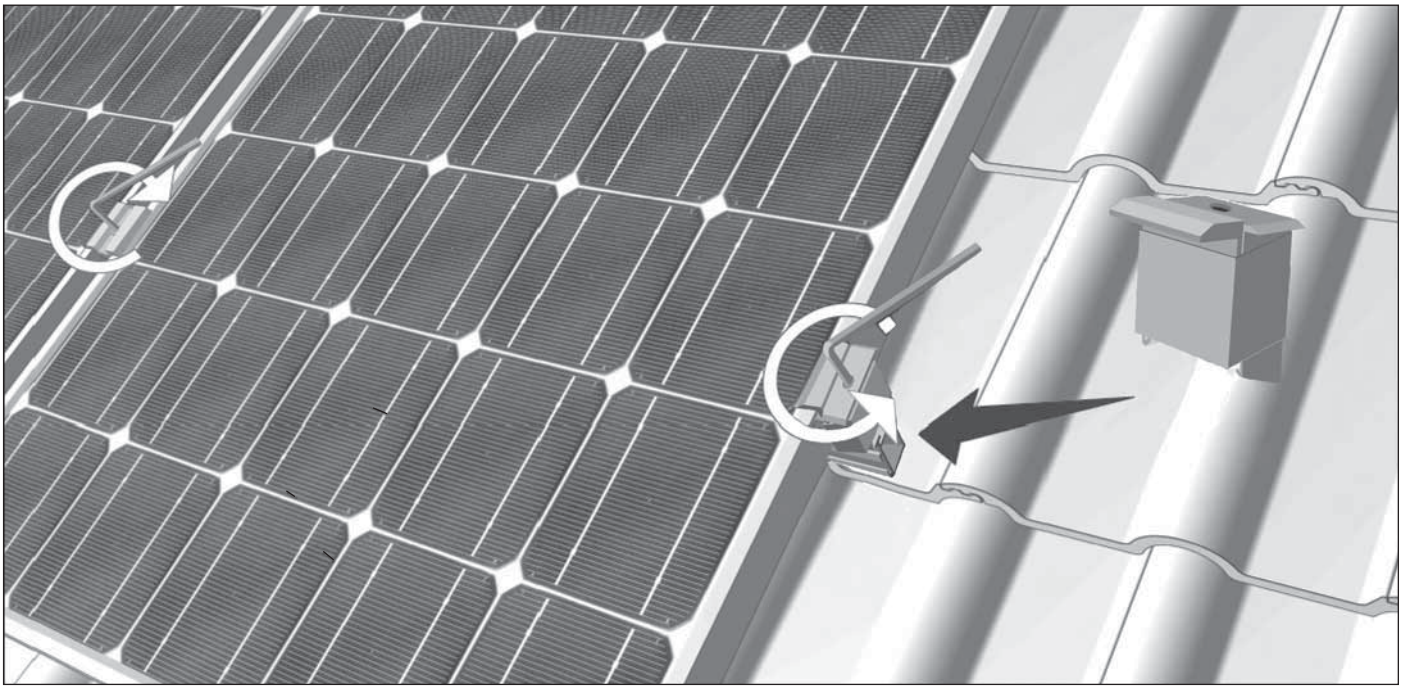
Renusol
Solar Mounting Systems

Installation Guide

VarioSole SE



- On-roof
- Framed Module
- Vertical
- Horizontal
- Snow-load zone I-IV
- Concrete roofing tiles
- Pantiles
- Plain tiles
- Slate
- Bitumen shingles
- Eternit corrugated roofing
- Corrugated metal roofing
- Ten years' material guarantee

The VARIOSOLE SE has been developed as a universal system for the easy installation of photovoltaic systems on pitched roofs.

"One size fits all"
As a special technical feature, we deliver the VARIOSOLE SE system with new patented module clamps which universally fit all framed modules with 34-50 mm frames. This reduces your storage and commissioning costs.

Please read this installation guide carefully before starting with the 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.

Please check the current version of the installation guide at www.renusol.com.

We hope that you will enjoy using your VarioSole SE.
Your Renusol team

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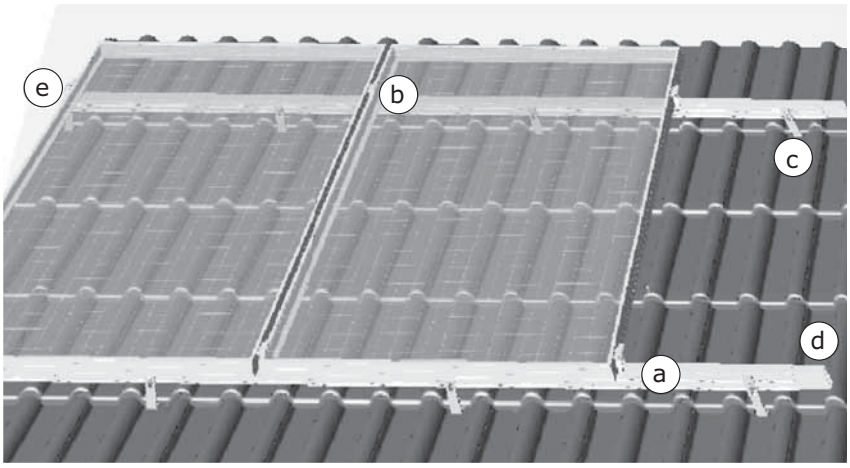
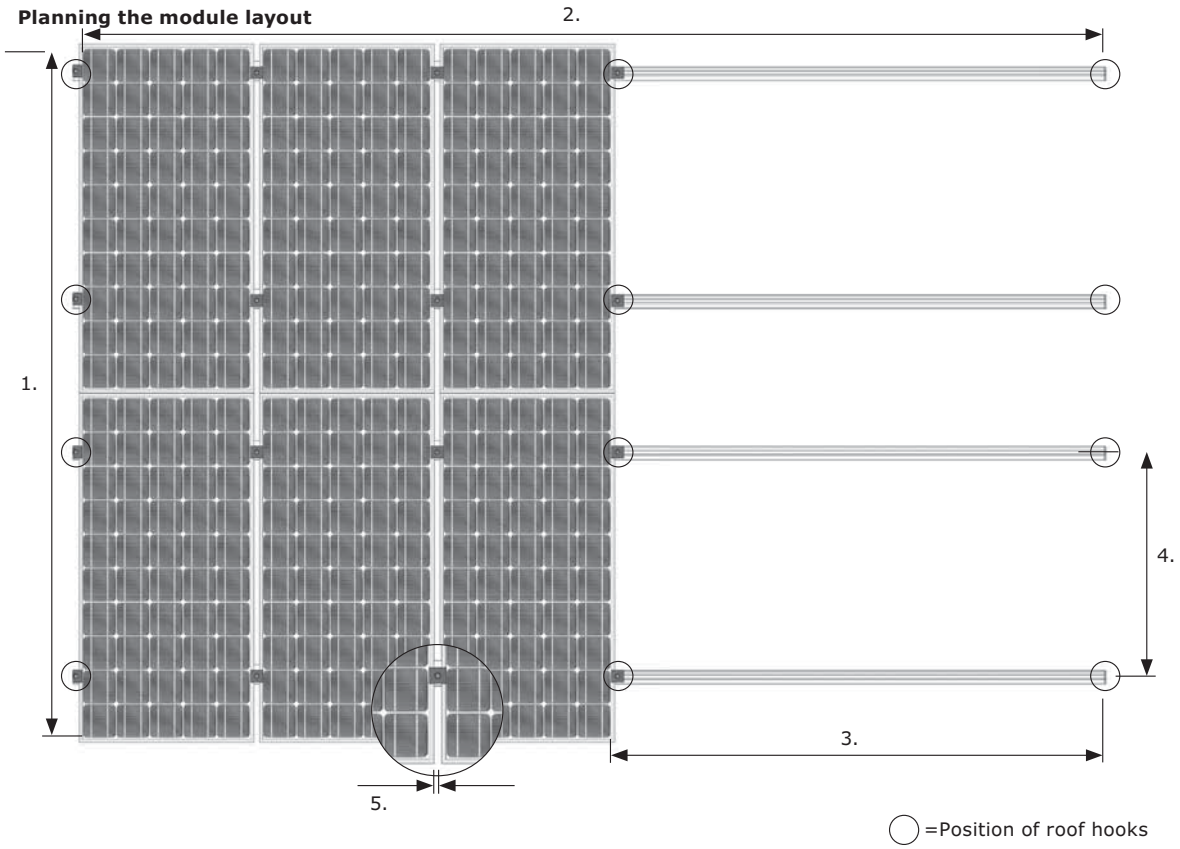
Installation preparation

Overview of system components

a VarioSole SE rails
b Module Middle clamp
c Roof hook
d Rail Connector
e Module end clamp



Planning the module layout



1. Number of modules in the vertical direction x module height (plus the distance between the vertical modules if necessary)
2. Number of modules in the horizontal direction x (module width + 20 mm) + 50 mm
3. Horizontal spacing of the roof hooks (as a rule = 1 x the distance between rafters at the edges and corners of the roof
   2 x the distance between rafters over the rest of the roof*)
4. Vertical spacing of the roof hooks = approx ½ to ¾ of module height (please also consult the recommendations of the module manufacturer)
5. Distance between the modules: 20 mm

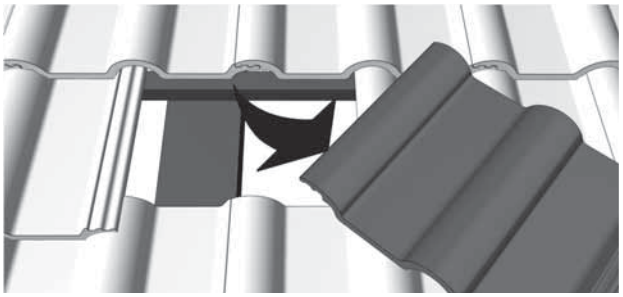
Overview of required tools

- 5 mm Allen key
- Cordless drill with Torx-30 (AW 30) bit
- Open-end spanner set 9, 13, 19 mm (recommended: ratchet)
- Angle grinder with stone disk
- String (for alignment)
- If necessary, wood to shim the roof hooks

* *Caution: The distance required according to DIN 1055 can vary widely depending on the height of the building, wind load, snow load, terrain category and roof pitch!*

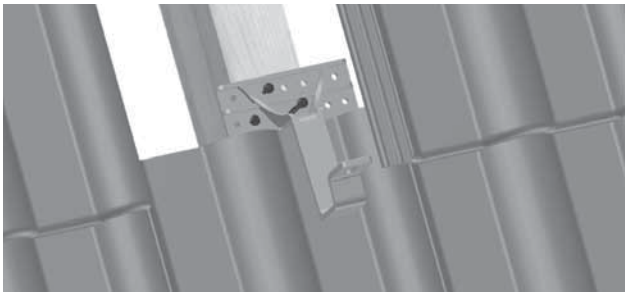
Installation

1



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

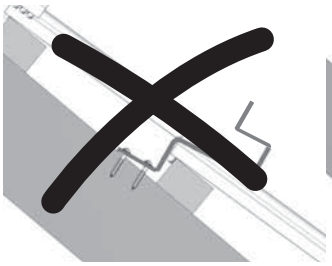
2



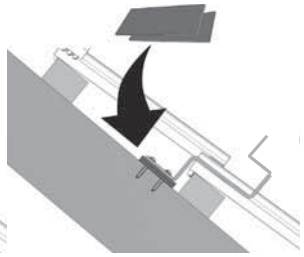
Fix the roof hooks to the rafter using three 6 x 80 mm wood screws.

3

Incorrect

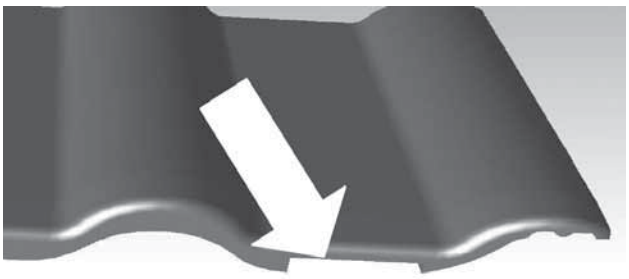


Correct



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

4



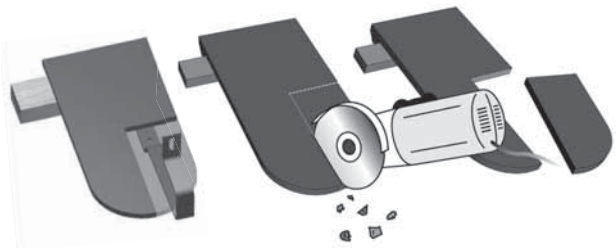
If necessary, use an angle grinder or hammer to cut a recess in the tile covering the roof hook at the place where the roof hook comes through so that the tile lies flat.
If grooved tiles are used, it will also be necessary to cut a recess in the lower tile.

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 Different 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.

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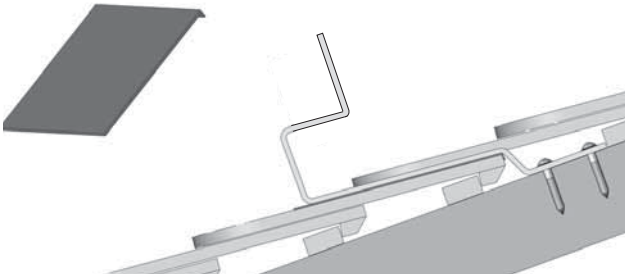
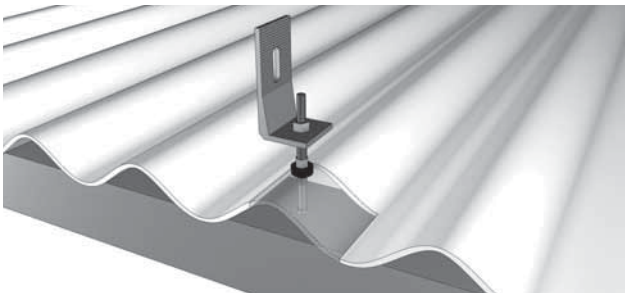


A titanium zinc metal sheet must be cut to fit on site with an overlap of at least 20mm around the recess, and installed under the roof hooks.
Caution!
Please take note of Figure 3 and where necessary line.

8 Different installation on eternit corrugated roofs

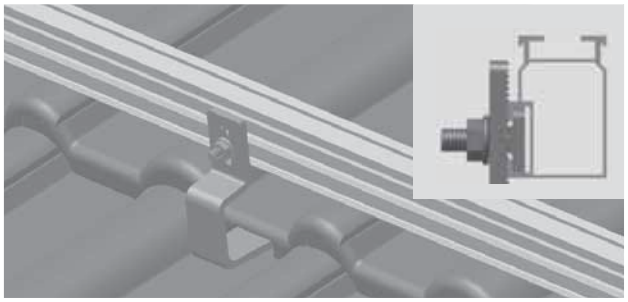


In the case of eternit corrugated roofing, hanger bolts are used instead of roof hooks. Drill through the roof cladding at the planned location and screw the hanger bolts into the purlins. The hole must always be drilled at the peak of the corrugation. Then mount the L brackets.

9

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

10 Base rail installation



Attach the rails loosely to the roof hooks or L-brackets using the hammer-head bolt and the serrated nut. Please ensure that the hammerhead bolt is vertically positioned in the rail channel after tightening.
The slotted hole in the roof hook allows optimal adjustment of the height of the rails.

Installation

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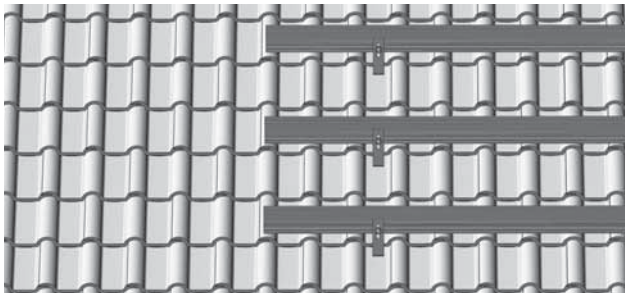
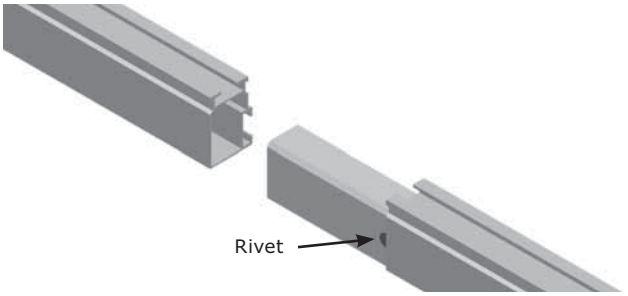


Position the first rails; we recommend using a length of string to align them with one another and the roof cladding. Then tighten the nuts that are used to fasten the rails to the roof hooks/hanger bolts (recommended torque 8 Nm).

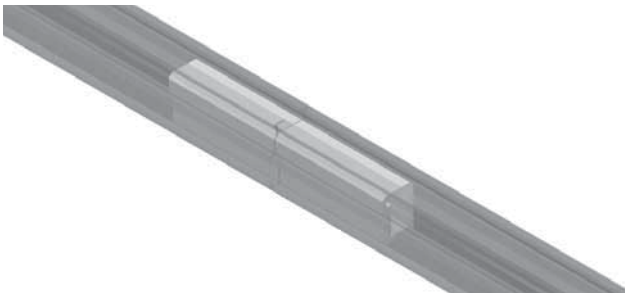
12 Installing connectors with rails



Connectors are required to connect several rails together.

First, insert the connector into the already mounted rail as far as it can go.

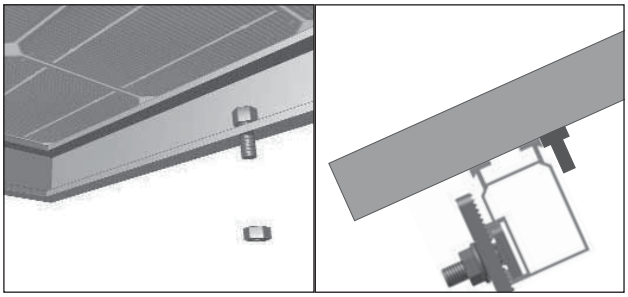
13



Then insert the next rail firmly into the connector, until the rivet is no longer visible and the rails are touching.
The connection is then complete.

The rivet ensures that the connector is inserted in both rails equally.

14 Module installation



Before installing the bottom modules should be provided with anti-slip protection (only with horizontal rail installation).
To do this, tighten M6 x 20mm screws (with the shaft downwards) with M6 nuts in the bottom fastening holes of the module.

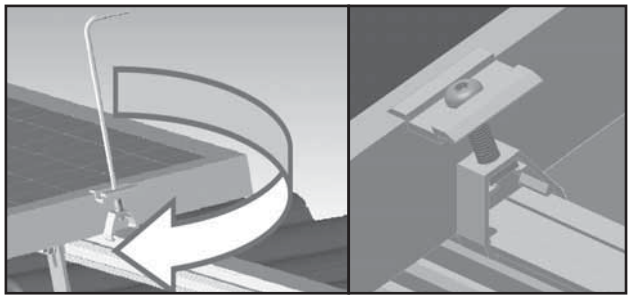
Lay the modules of the bottom line so that the anti-slip protection of the frame is against the bottom rail.

15

Install the modules with the clamps as shown in the drawing:
Push the module end clamp sideways onto the frame rail. The end clamps can be adjusted to the height of the module frame by turning the Allen bolt **anti-clockwise** using the Allen key, then secured (torque 9 – 10 Nm).

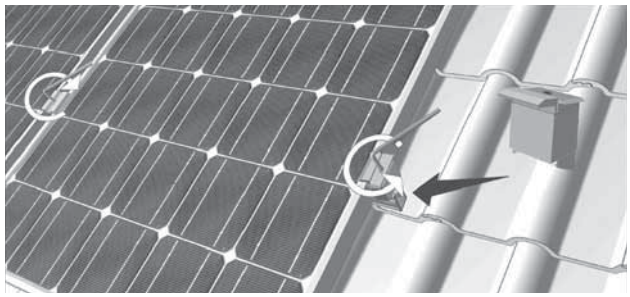
Installation

16



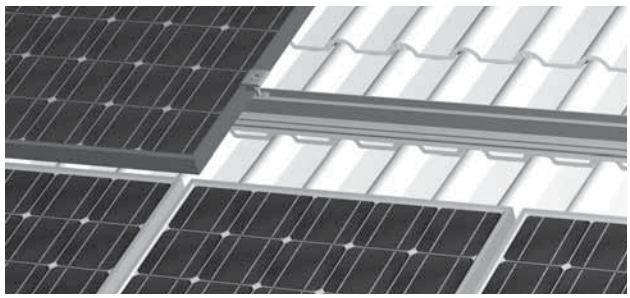
The middle module clamps can be attached anywhere on the frame. Hook one side of the clamp behind the upper edge of the frame rail and push down until it clicks audibly into place. The middle module clamps can be adjusted to the height of the module frame by turning the Allen bolt **clockwise** using the Allen key, and then fastened (torque 9 – 10 Nm).

17



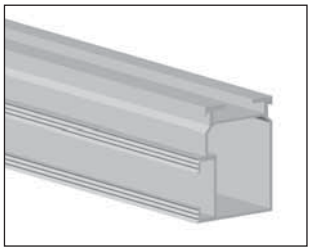
Place the last module in the row on the rails and secure the last module with the module end clamp using the Allen key (torque 8 Nm).

18

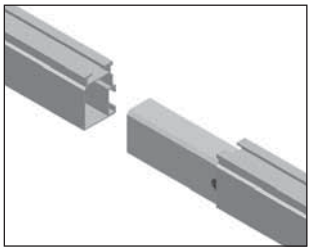


Now slide in the first module in the next row from above onto the corresponding module of the row beneath. Some distance can be maintained from the lower module for optical reasons. A middle module clamp can be used as a spacer to ensure that the vertical and horizontal gaps between the modules are of identical sizes. Continue installing the other modules according to steps 14 to 16, until all the modules have been installed. Installation is complete.

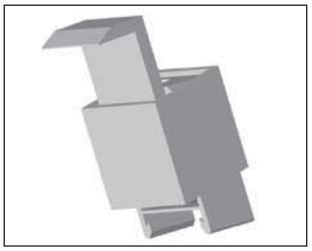
Overview of system components



Basic rail VarioSole SE

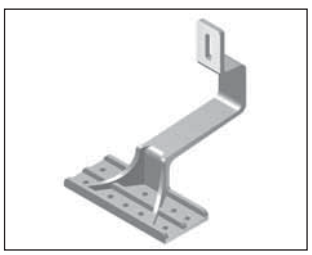


Connector SE



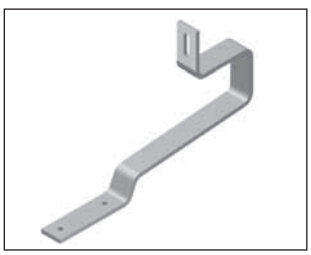
Module end clamp

Middle module clamp

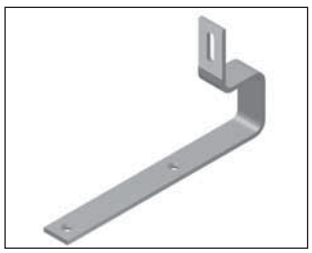


Standard roof hook

Hanger bolt



Roof hook (plain tiles)



Roof hook (slate)

For your notes

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