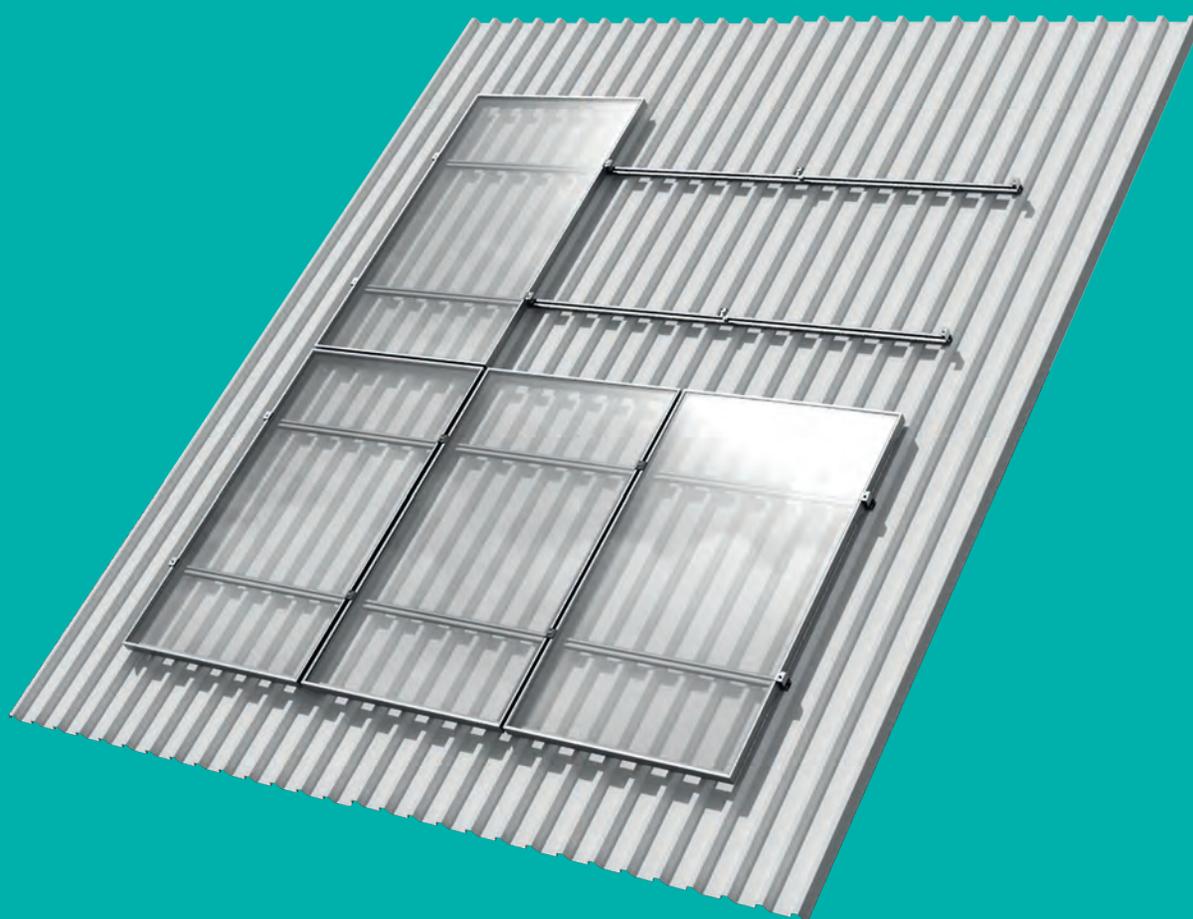


Trapeze ProLine Installation manual



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1. Introduction

1.1. Short Description

The Trapeze ProLine on-roof system is a robust racking system for the mounting of PV modules on trapezoidal sheet roofs. It consists of aluminium support rails and all necessary small parts for the fastening of the modules on to the rails as well as for the connection of the components with each other. The Trapeze ProLine allows for both portrait and landscape installation of the modules.

1.2. About These Instructions

Content

These instructions describe the mounting of the onroof system Trapeze ProLine and all system-specific information for planning, components and safety warnings. The first part of the Instructions (chapters 5) demonstrates the complete installation of framed modules.

Applicable Documents

In addition to this document, the document "Installation Instructions for PV Mounting Systems: General Part" is part of each product delivery. This document describes the general applicable information for Mounting Systems products on standardisation, safety, transport, maintenance, disassembly and disposal. Both the present Instructions and the "Installation Instructions for PV Mounting Systems: General Part" are an integral part of the system Pitched ProLine and must be adhered to for each installation.

It is crucial to carefully read these Instructions as well as all applicable documents prior to carrying out any installation, maintenance or disassembly work. You are provided with the information required for the safe and complete installation, maintenance and disassembly.

Should you have any questions, please contact Mounting Systems GmbH.

User Group

Mounting Systems GmbH's installation instructions are intended for the following persons (user group):

- Skilled personnel
- Instructed personnel

Skilled personnel

Skilled personnel are individuals who, on the basis of their professional training, are able to execute installation, maintenance, and disassembly work appropriately.

Instructed personnel

Instructed personnel are individuals who have been instructed and taught appropriately regarding the assigned tasks and the possible risks in the event of improper conduct. An instructed individual must have received instructions regarding the required safety policies, precautions, relevant regulations, accident prevention regulations, as well as operating conditions and must have demonstrated his/her competence.

The implemented work must be approved by skilled personnel.

Orientation Guide

The following visual aids will make installation easier.

Piktograms:



This symbol indicates important information and useful tips.



This symbol indicates tips and tricks to make processes easier.

1.3. Warnings

The warnings used in these Mounting Instructions indicate safety-related information. They include:

- Warning symbols (pictograms)
- Signal words for the identification of the hazard level
- Information about the type and source of the hazard
- Information about potential consequences in case of the hazard being disregarded
- Measures for the prevention of hazards and the prevention of injuries or damage to property.

The signal words of the warnings respectively indicate one of the following hazard levels:

 DANGER	Indicates a great and extraordinary danger, which may result in death or serious injury if ignored.
 WARNING	Indicates a potentially dangerous situation, which may result in serious or medium injury or damage to the property.
 CAUTION	Indicates a potentially dangerous situation, which may result in minor injuries or damage to the property if ignored.
 ATTENTION	Indicates potential danger, which can result in damage to the property.

1.4. Safety

All generally applicable safety regulations for products of Mounting System GmbH can be viewed in the document "Installation Instructions for PV mounting Systems: General Part". Please read this document carefully and adhere to the described points - only use the system for its intended purpose, comply with the obligations of the building proprietor and follow both the general and specific safety instructions.

In addition, please observe the specific safety instructions which precede the process steps in the present product-specific Mounting Instructions.

2. Technical Description

2.1. System Overview

In the following, the most important system parts are described.

The design of the individual system components can vary, or additional components may be required, depending on:

- Type of roof (substructure and roof cladding)
- Type of module
- Number of modules and configuration
- Local conditions

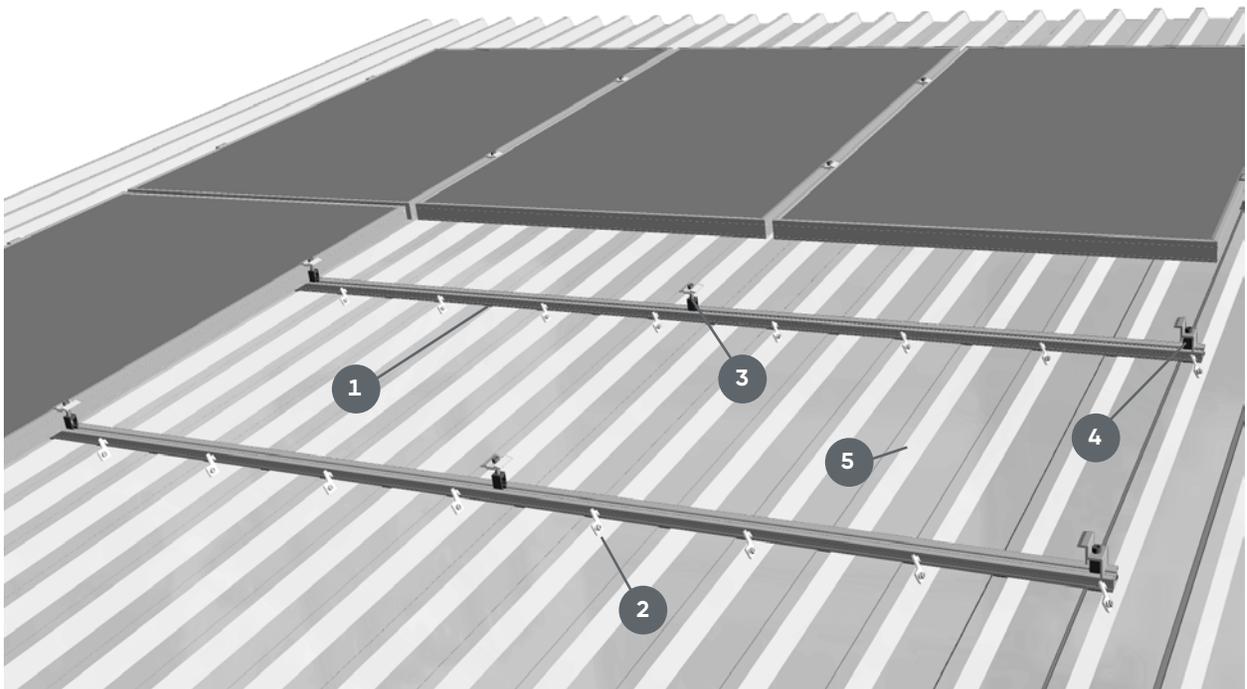


Image 2.1. - 1 Portrait Installation

Trapeze ProLine Components:

- 1 EPDM
- 2 Lateral fixing clip
- 3 Module clamp
- 4 Module end clamp
- 5 Roof

2.2. Components

In the following all system components of the Trapeze ProLine are shown, which can be included in the scope of the delivery. The exact scope of the delivery and the number of individual components depends on your order.



- 1 Trapeze ProLine Rail
- 2 Trapeze ProLine Rail for landscape installation, with pre-mounted EPDM
- 3 Trapeze ProLine side fixing clip with AluFix seal
- 4 Thin sheet-metal screw (5.5 x 25mm)
- 5 Trapeze ProLine Connector
- 6 Module clamp
- 7 Module end clamp

Image 2.2. - 1

2.3. Technical Data

Application	Pitched roof – on-roof
Roof cladding	Trapezoidal metal sheet ¹
Min. sheet thickness	Steel: 0.4 mm ² Aluminium: 0.8 mm
Min. bead height	From 20 mm
Roof slope	Up to 20° ²
Building height	Up to 20 m ²
PV-Modules	Framed, frameless
Module orientation	Portrait, landscape
Size of module array	Any size possible ³
Position of the module	No special requirements
Possible height compensation	Up to 5 mm
Distance between rail fixations	Depending on load situation (automatic verification per design software)
Standards	Eurocode 1 – Action on structures Eurocode 9 – Design of aluminium structures
Supporting profiles	Extruded aluminium profiles (EN AW 6063 T66)
Rail fixations	Side fixing clip: Aluminium (EN AW 5754)
Small parts	Stainless steel (V2A)
Colour	Aluminium: plate finish
Warranty	10 years ⁴

1 The screws which are provided for the system Trapeze ProLine are suitable for mounting on trapezoidal sheet metal roofs made of steel or aluminum. In case of an installation on sandwich elements, the customer must clarify and ensure that the deployed sandwich element can withstand the fastening forces and loads resulting from the PV installation. Mounting Systems recommends the installation of the Trapeze ProLine-system on single-layer trapezoidal sheet metal roofs. Mounting Systems cannot guarantee a sufficient long-term load capacity of the sandwich element after the installation of the Trapeze ProLine-system.

2 Depending on the site situation, the building, the selected fixing devices and the type of module, other values may apply. With the Trapeze ProLine-Design tool you can easily calculate the permissible maximum values for each plant.

3 Based on the expected thermal expansion due to temperature and the thus occurring tension within the rails, we recommend a maximum length of 12 m per module row.

4 Please find the exact terms in the Mounting Systems GmbH warranty document.

3. Important installation information

3.1. Preparation work

The Trapeze ProLine on-roof system is designed with different rail and roof fasteners in accordance with Eurocode 1-DIN EN 1991-1-1 for various maximum loads. The suitability of the material must therefore be verified for each system, e.g. by means of the Trapeze ProLine configuration tool. Please also observe the suitability constraints, which are listed in Chapter 2.3 "Technical Data".



DANGER

Risk of fatal injury from damage to roof

Excessive loads can severely damage the roof.

- Before mounting and installation, please make sure that the building and especially the roof cladding meets the increased structural requirements for the PV system and the mounting operation.



DANGER

Risk of fatal injury from falling objects

Parts falling from the roof can result in serious injuries or death.

- Before commencing with the installation, please ensure that the material used meets the structural requirements of the site.

3.2. Mounting Preparations

Mounting System GmbH recommends that you inquire about the local conditions before ordering the Trapeze ProLine. In particular, acquaint yourself with:

- Roof condition (e.g. bead distance and bead height),
- The thickness and the material of the trapezoidal sheet,
- The quality and the condition of the trapezoidal sheet
- Adequate fastening of the trapezoidal sheet to the substructure.

3.3. Mounting Aids and Required Tools

For the installation of the mounting system, you will require the following tools:

- Allen key 5 mm/ hexagon socket drill bit, 5mm,
- Cordless screwdriver
- Drill bit for cordless screwdriver TX30
- Angle grinder with metal cutting disc
- Chalk line
- Spirit level
- Yard stick / tape measure
- Lifting gear (e.g. aerial lifts, carrying straps)
- Suction lifter
- If required, Spacer gauge (for landscape installation)

3.4. On the Mounting Descriptions

In the following chapters all steps for the planning and installation of the Trapeze ProLine are listed in the correct sequence. Chapters 4, 5 and 6 describe the installation steps for a portrait layout of the modules; chapters 7, 8 and 9 describe the installation steps for a landscape installation.

Please adhere to the mounting steps listed here and be sure to follow the safety instructions.

4. Planning the Module Area for a Portrait Layout of the Modules

For portrait installation, the profile rails are fastened to the beads of the trapezoidal sheet by means of fixing clips. The clips must be mounted with a defined distance, which depends on the material and thickness of the trapezoidal sheet, the distance to the high beads, the position on the roof and the on-site conditions.* The layout is defined by the design in the configuration tool or by project-related structural analyses.

Taking the above mentioned points into account, the fixing clips must be placed in such a way that they are as close as possible to the module clamps.

When positioning the fixing clips take into account that:

- The specified dimensions are approximate values
- The dimensions of the trapezoidal sheet and the high beads define the true horizontal distance.

* Layout required according to local conditions in accordance with: Eurocode 1-DIN EN 1991-1-1
Eurocode 9-DIN EN 1999-1-1.

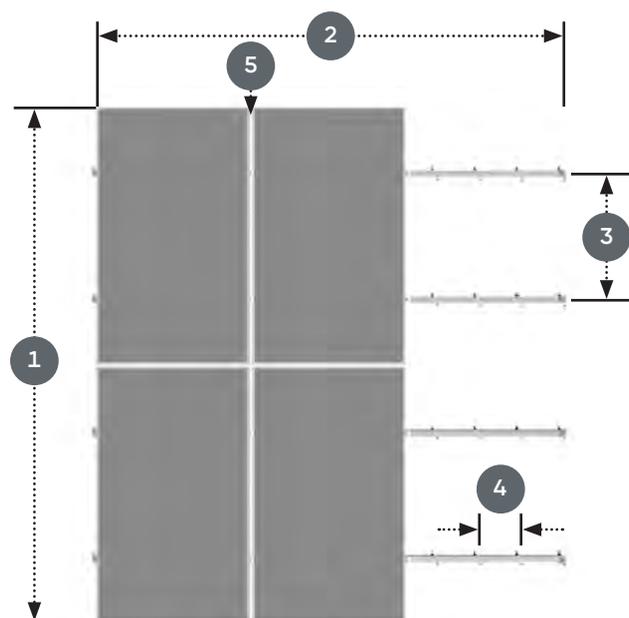


Image 4. – 1

- 1 Height of the module field: Number of modules vertically x module length (+ desired clearances)
- 2 Width of the module field: Number of modules horizontally x (module width + 19 mm) + 41 mm
- 3 Vertical distance of the rail (in accordance with the clamping points defined by the module manufacturer): Approx. quarter points of the modules = $1/2 \times$ module length
- 4 Horizontal distance of the fixing clips: According to the plan, depending on the trapezoidal sheet and the structural calculations*
- 5 Distance between the modules = 17-19 mm

* Layout required according to local conditions in accordance with Eurocode 1-DIN EN 1991-1-1/
Eurocode 9-DIN EN 1999-1-1

5. Installing Rails for Portrait Layout of the Modules

5.1. Placing the Side Fixing Clips

Mounting steps:

- Insert the side fixing clip in the side channel.
- Press the clip onto the side of the high bead and make sure that it makes even contact and that it is hooked in correctly in the side channel of the rail.
- The side fixing clips are fastened to opposite sides of the high bead.

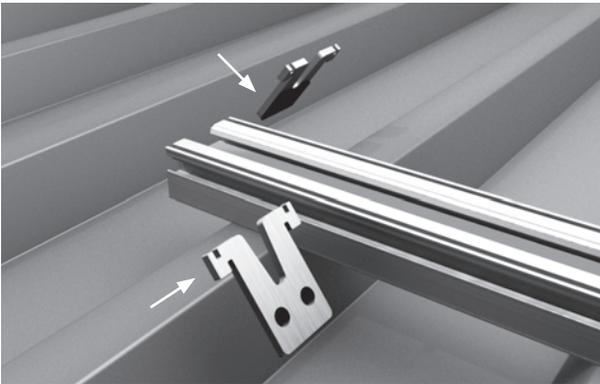


Image 5.1. - 1

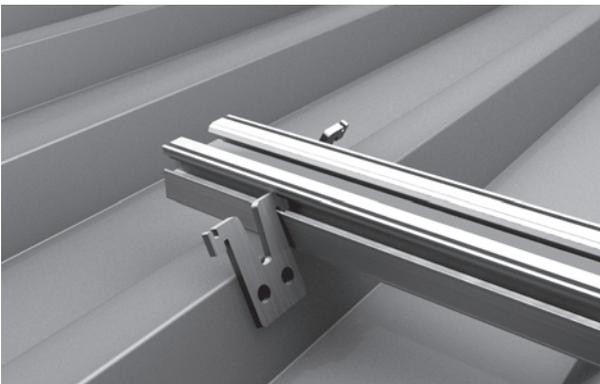


Image 5.1. - 2



DANGER

Risk of fatal injury due to falling

Falling from the roof can result in serious injuries or death.

- Please wear the statutory protective equipment.
- Secure yourself against falling.
- Do not perform any work in strong winds.



CAUTION

Material damage due to incorrect mounting

Incorrectly mounted fixing clips can pull out.

- When inserting the fixing clips, always ensure the correct fit of the clip in the channel.



DANGER

Risk of fatal injury from falling objects

Parts falling from the roof can result in serious injuries or death.

- Block off the hazard area on the ground prior to the mounting work to prevent falling objects injuring persons.
- Ensure that no parts can fall off the roof.
- Please wear the statutory protective equipment.
- Do not stay in the hazard area.
- Do not perform any work in strong winds.
- After completion of the installation, check the racking system and the modules for a tight fit



NOTE!

Do not fasten all rails at once, but alternate between installation steps 5.5 and 5.6. Mount the individual rails, which have been connected with a connector.

5.2. Fastening the Rails

Mounting steps:

- Fasten the fixing clips on the side with the supplied thin sheet-metal screws 5.5x25 mm with sealing washer. Make sure not to over tighten the screws. The appropriate tightening torque depends on the strength and the material of the trapezoidal sheet.

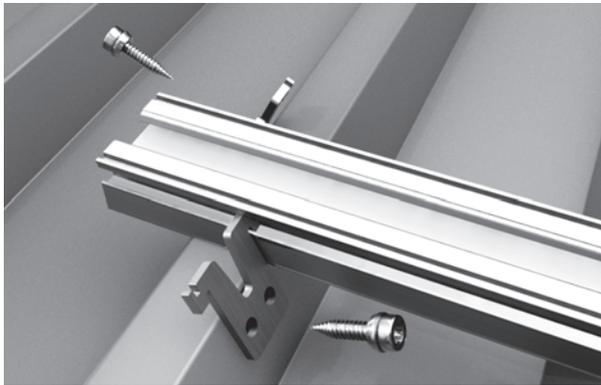


Image 5.2.- 1



Image 5.2. - 2



CAUTION

Damage to building from leaking

Incorrectly mounted fixing clips and thin sheet-metal screws can lead to leaks.

- Check that the fixing clips sit evenly on the high bead.
- Make sure that the AluFix seal between the high bead and the clip has a clean fit.
- When mounting the top fixing clips, make sure the EPDMs are set correctly.



CAUTION

Material damage due to incorrect mounting

Incorrectly mounted thin sheet-metal screws can pull out.

- Fasten the thin sheet-metal screws tightly but do not overtighten.



CAUTION

Damage to the building and the PV system due to incorrect mounting

Incorrect distance between the fixing clips can cause damage to the building and the PV system.

- When fastening the fixing clips to the rails, make sure to adhere to the distances defined in the calculation tool or the project-specific analysis.
- Distinguish between and adhere to the possibly differing distances in the centre and at the edges of the roof.

5.3. Connecting Rails



NOTE!

Do not fasten all rails at once, but alternate between installation steps 5.5 and 5.6. Mount the individual rails, which have been connected with a connector.

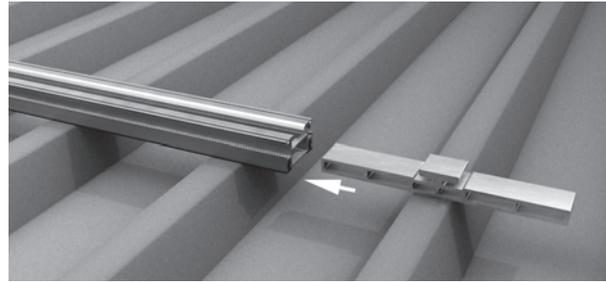


Image 5.3. - 1

Mounting steps:

- Insert the connector into the first rail.
- Slide the next rail onto the placed connector.



NOTE!

The connected rail tracks should not exceed a length of 12 m. Thereafter, an expansion joint (approx. 5 cm) must be considered. Do not install modules over the expansion joint.

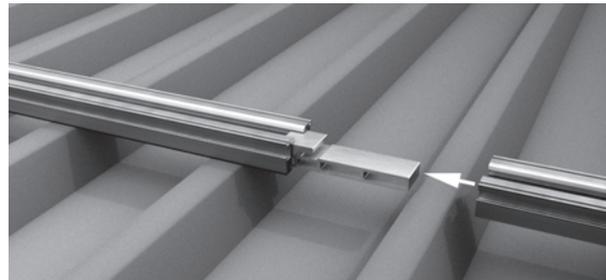


Image 5.3. - 2

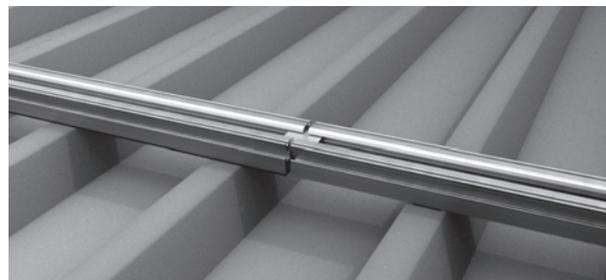


Image 5.3. - 3

6. Mounting Modules in portrait orientation

The modules are mounted to the rails one by one. Mounting Systems GmbH recommends mounting the modules starting from one side. Module clamps and module end clamps are used for the fastening of the modules. The module end clamps can hold one module each. The module clamps are positioned between two modules.

6.1. Mounting Clickstones

Clickstones are used for the installation of the modules. The Clickstone is a special clip with which the module clamps are fastened to the rail. You only need an Allen key (5 mm) for the mounting. You can insert the Clickstone from above into the channel of the rail.

Mounting steps:

- Insert the Clickstone at a slight angle into the rail channel.
- Push the Clickstone down. Make sure you hear the Clickstone clicking into the rail.

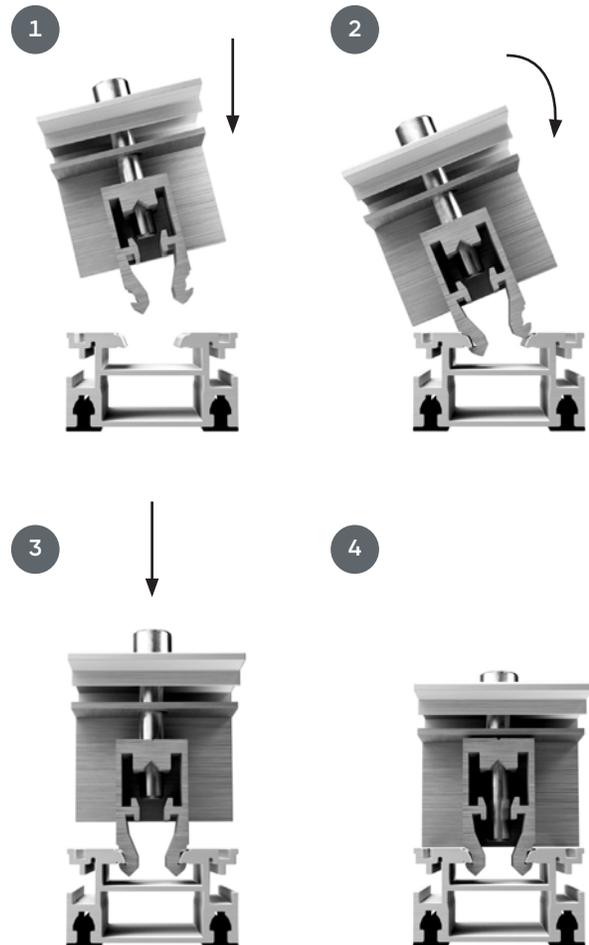


Image 6.1. - 1



NOTE!

The shape of the Clickstone corresponds exactly to the profile of the rail channel. It has been consciously constructed not to run easily in order to prevent unintentional slipping for vertical rail tracks. To move the Clickstone, press lightly on the bolt, from above, and move the stone sideways by applying a little pressure.



NOTE!

The lugs on the inside of the Clickstone are designed in such a way that once the bolt has been tightened, they prevent a "click out" mechanically. Accordingly, the bolt must first be unscrewed to above the lugs before the Clickstone can be removed from the rail by pressing the sides of the stone together and lifting.



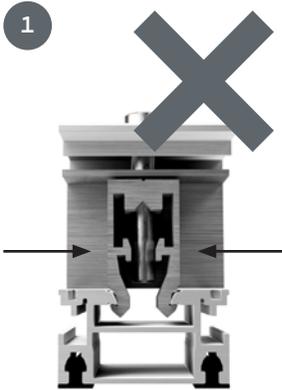
CAUTION

Material damage due to incorrect mounting

Incorrectly mounted Clickstones can become loose; as a result, PV modules can fall and be damaged.

- Mount all Clickstone connections in accordance with the instructions.

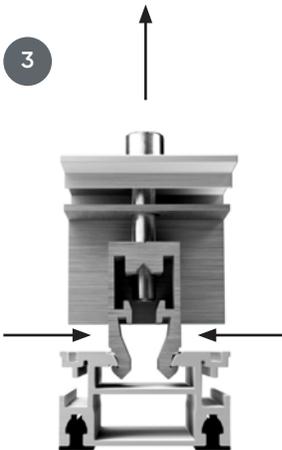
1



2



3



4



CAUTION

Material damage caused by deformed Clickstones

If clearly deformed Clickstones are used, the safety of the module fastening is not guaranteed. PV modules can fall and be damaged.

- Only use Clickstones where the lugs are parallel to each other and you can clearly hear them clicking into the rail channel.
- Replace deformed Clickstones prior to installation.

Image 6.1. - 2

6.2. Fastening the Modules on the Outer Side

The margin modules of the PV system (for portrait mounting, the left and right module column) are fastened on the outer side with two module end clamps each.

Mounting steps:

- Place and align an outer module. The rail must protrude the module by 30 mm.
- Insert the Clickstone of the module end clamp into the channel of the rail.
- Push the module end clamp right to the module frame.
- Tighten the bolt (torque 8 Nm) and thus clamp the module.



CAUTION

Material damage due to incorrect mounting

Incorrectly fastened modules can fall and become damaged.

- Make sure the Clickstones click in correctly.
- Push the module end clamp all the way to the module.
- Adhere to the stipulated torque when tightening the bolt.
- Check the module fits tightly after mounting.



Image 6.2. - 1

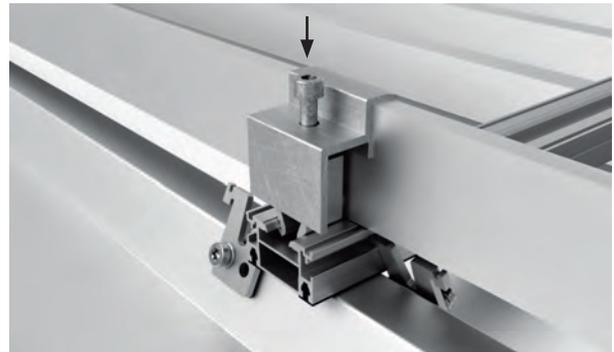


Image 6.2. - 2



Image 6.2. - 3

6.3. Fastening the Modules on the Inner Side

Two module clamps are fastened between two modules.

Mounting steps:

- Insert the Clickstone of the module clamp into the rail channel of the rail.
- Push the module clamp all the way to the frame of the already mounted module.
- Push the second module to the module clamp and align.
- Tighten the bolt (torque 8 Nm) and thus clamp the modules.



CAUTION

Material damage due to incorrect mounting

Incorrectly fastened modules can fall and become damaged.

- Make sure the Clickstones click in correctly.
- Push the module end clamp all the way to the module.
- Adhere to the stipulated torque when tightening the bolt.
- Check the module fits tightly after mounting.



Image 6.3. - 1



Image 6.2. - 2



Image 6.2. - 3

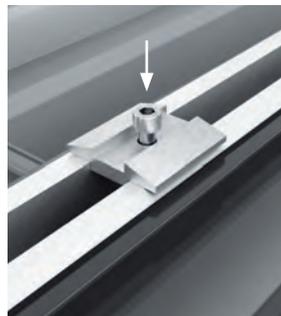


Image 6.2. - 4

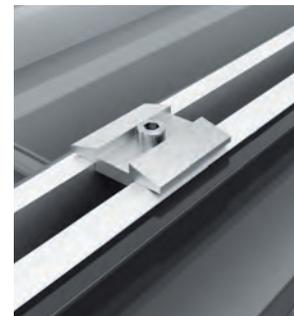


Image 6.2. - 5

6.4. Fastening Additional Module Rows

Mounting steps:

- Push the modules in the upper rows from above down to the modules in the lower rows. For optical reasons you can also keep a distance to the lower module.



NOTE!

Use e.g. a module clamp as a spacer gauge. This way you will achieve identical horizontal and vertical distances between modules.

- Fasten the modules analogously to the 1st row with module end clamps and module clamps (see 6.2. and 6.3.)

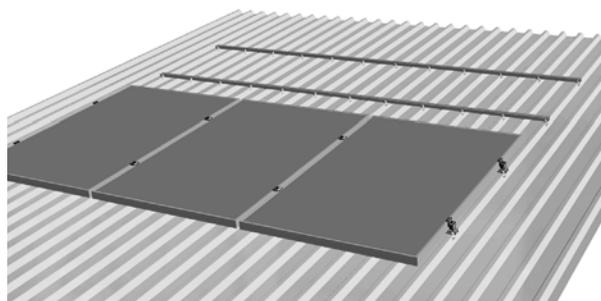


Image 6.4. - 1

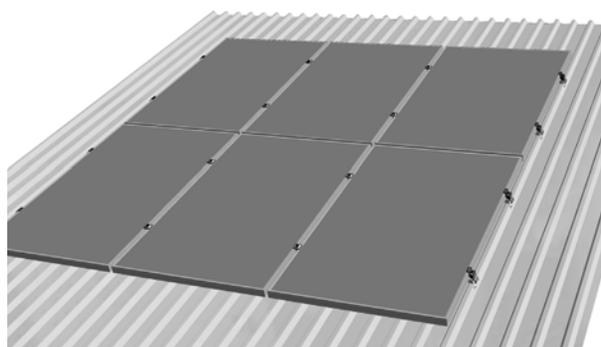


Image 6.4. - 2

7. Planning the Module Area for a Landscape Layout of the Modules

For landscape installation, short rail pieces (GS 1/15 CS) of a length of 100 mm are installed. The distances are determined by the dimensions of the modules to be installed as well as the high bead distance. The clamping points stipulated by the module manufacturer must be adhered to. The distances between the rails are derived as follows:

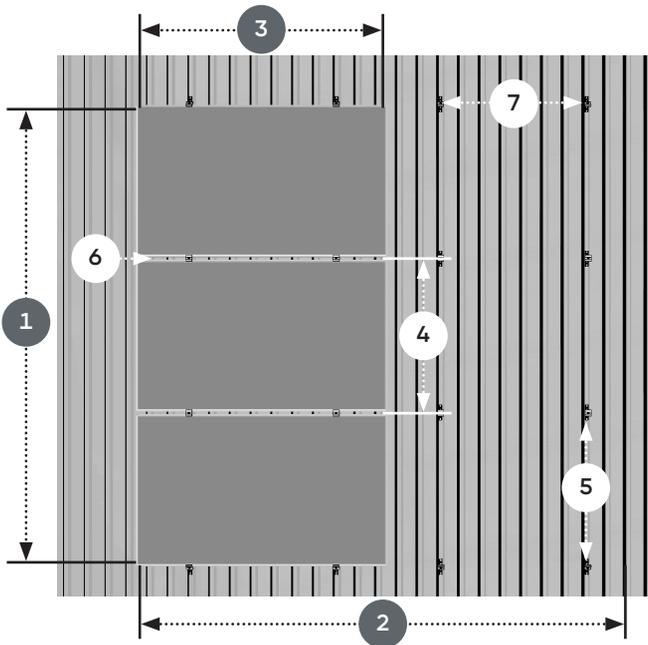


Image 7. - 1

- 1 Height of the module field: Number of module vertically x (module width + 19 mm) + 41 mm
- 2 Width of the module field: Number of modules horizontally x module length (+ desired clearances)
- 3 Module length
- 4 Module width
- 5 Vertical distance between two rail sections: Width of the module minus 82mm (clear distance between the rail pieces, tolerance + /-1mm)
- 6 Distance between the modules = 17-19 mm
- 7 Horizontal distance between the rail pieces of a module column: approx. 1/2 x module length, depending on the bead grid (the rail pieces must be positioned on the high beads)



DANGER

Material damage due to incorrect mounting

Incorrectly fastened modules can fall and become damaged.

- Make sure the Clickstones click in correctly.
- Push the module end clamp all the way to the module.
- Adhere to the stipulated torque when tightening the bolt.
- Check the module fits tightly after mounting.



DANGER

Material damage due to incorrect mounting

Incorrectly fastened modules can fall and become damaged.

- Make sure the Clickstones click in correctly.
- Push the module end clamp all the way to the module.
- Adhere to the stipulated torque when tightening the bolt.
- Check the module fits tightly after mounting.

8. Installing Rails for Landscape Layout of the Modules

For landscape installation, rail pieces of a length of 100 mm (GS 1/15 CS) are installed. EPDM strips are pre-mounted and no longer need to be set. The rails are directly fastened to the high bead with two thin sheet-metal screws.



DANGER

Risk of fatal injury from falling objects.

Parts falling from the roof can result in serious injuries or death

- Block off the hazard area on the ground prior to the installation work to prevent falling objects injuring persons.
- Make sure that no parts can fall off the roof.
- Please wear the statutory protective equipment.
- Do not stay in the hazard area.
- Do not perform any work in strong winds.
- After completion of the installation, check the mounting system and the modules for a tight fit.



DANGER

Risk of fatal injury due to falling

Falling from the roof can result in serious injuries or death

- Please wear the statutory protective equipment.
- Secure yourself against falling.
- Do not perform any work in strong winds.

Mounting steps:

- Determine the position of the rails on the trapezoidal sheet taking into account the high bead distance and the permitted clamping points of the PV modules used.
- Mark the position of the short rails on each high bead with the aid of a chalk line. Make sure that the chalk line has an angle of exactly 90° to the high beads.
- Start from the bottom with the first row and position the rail pieces precisely parallel to the beads on the high beads.
- Fasten the profile rail pieces with two thin sheet-metal pieces each in the trapezoidal sheet.
- Mount the further rows of rail pieces in the same manner. Make sure to keep the correct vertical distances between the rail pieces



CAUTION

Material damage due to incorrect mounting

Incorrectly fastened thin sheet-metal screws can pull out.

- Fasten the thin sheet-metal screws tightly but do not over tighten.

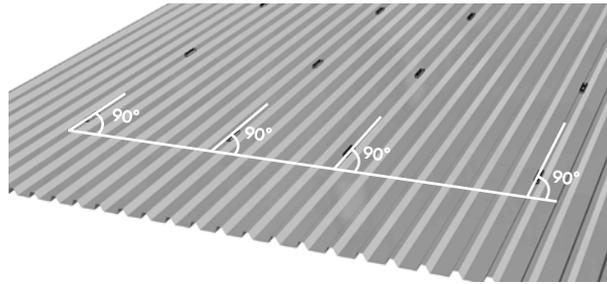


Image 8. - 1

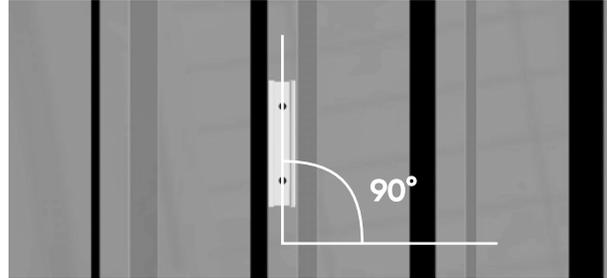


Image 8. - 2



Image 8. - 3

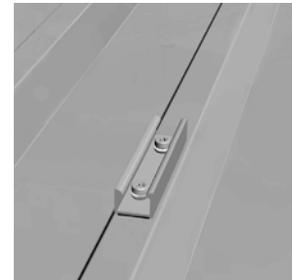


Image 8. - 4

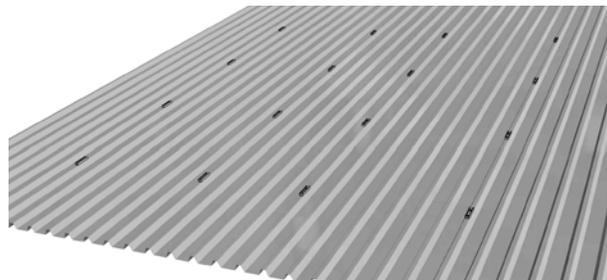


Image 8. - 5

9. Mounting Modules in Landscape orientation

The modules are mounted on the rails one by one. Mounting Systems GmbH recommends mounting the modules in columns from the bottom to the top. Module clamps and module end clamps are used for the fastening of the modules. The module end clamps can hold one module each. The module clamps are positioned between two modules.

9.1. Mounting Clickstones

Clickstones are used for the installation of the modules. The Clickstone is a special clip with which the module clamps are fastened in the profile rail. You only need an Allen key (5 mm) for the mounting. You can insert the Clickstone from above into the channel of the rail.

Mounting steps:

- Insert the Clickstone at a slight angle into the rail channel.
- Push the Clickstone down. Make sure you hear the Clickstone clicking into the rail.

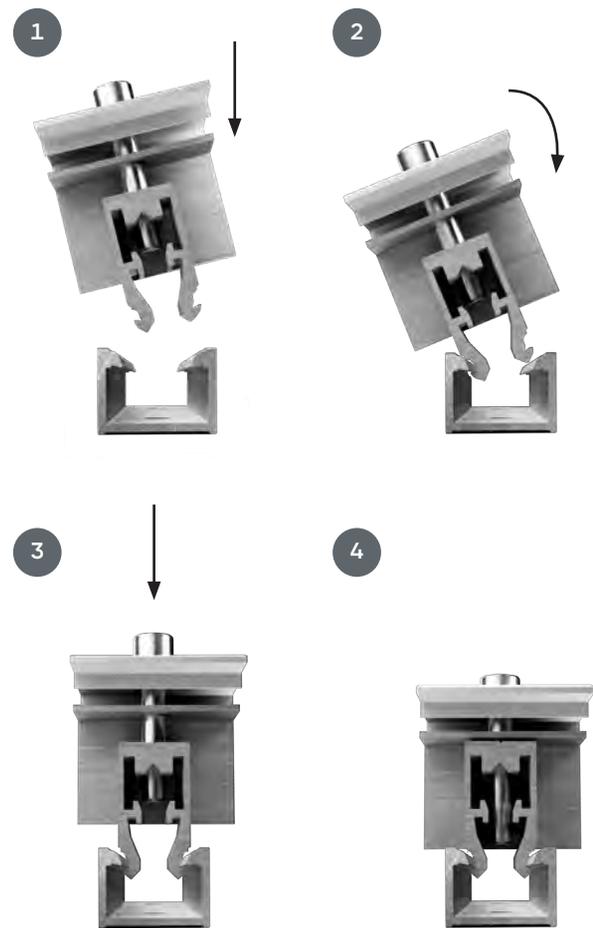


Image 9.1. - 1



NOTE!

The shape of the Clickstone corresponds exactly to the profile of the rail channel. It has been consciously constructed not to run easily in order to prevent unintentional slipping for vertical rail tracks. To move the Clickstone, press lightly on the bolt, from above, and move the stone sideways by applying a little pressure.

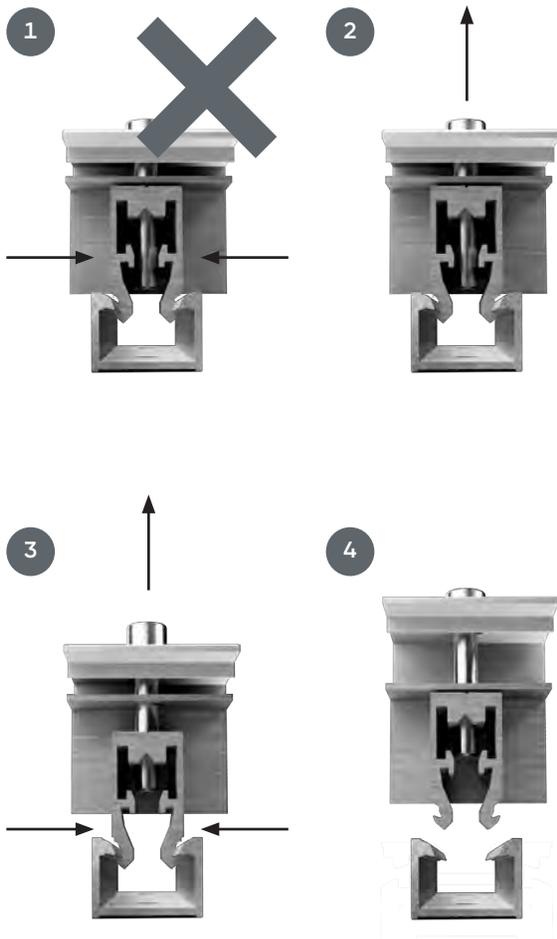


Image 9.1. - 2



Material damage due to incorrect mounting

CAUTION

If clearly deformed Clickstones are used, the safety of the module fastening is not guaranteed. PV modules can fall and be damaged.

- Only use Clickstones where the lugs are parallel to each other and you can clearly hear them clicking into the rail channel.
- Replace deformed Clickstones prior to installation.



Material damage due to incorrect installation

CAUTION

Incorrectly mounted Clickstones can become loose; as a result, PV modules can fall and be damaged.

- Mount all Clickstone connections in accordance with the instructions.



NOTE!

The lugs on the inside of the Clickstone are designed in such a way that once the bolt has been tightened, they prevent a "click out" mechanically. Accordingly, the bolt must first be unscrewed to above the lugs before the Clickstone can be removed from the rail by pressing the sides of the stone together and lifting.

9.2. Fastening the Modules on the Outer Side

The margin modules of the PV system (for landscape mounting, the top and bottom module row) are fastened on the outer side with two module end clamps each.

Mounting steps:

- Insert the Clickstone of the module end clamp in the channel of the rail.
- Place and align the module.
- Push the module end clamp right to the module frame.
- Tighten the screw (torque 8 Nm) and thus clamp the module.

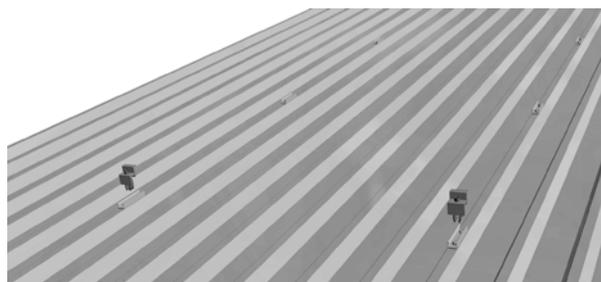


Image 9.2 - 1

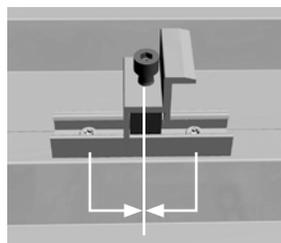


Image 9.2. - 2

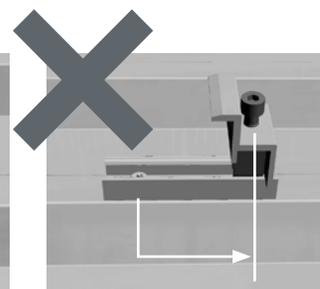


Image 9.2. - 3

Correct position of the module end clamp: Positioned so as to sit between the thin sheet-metal screws.

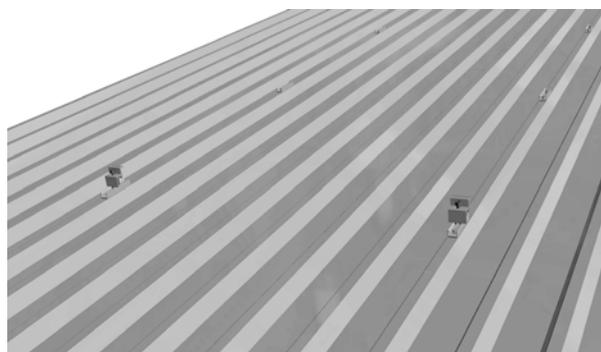


Image 9.2. - 4



CAUTION

Material damage due to incorrect mounting

Incorrectly fastened modules can fall and be damaged.

- Make sure the Clickstones click in correctly.
- Push the module clamp all the way to the module.
- Adhere to the stipulated torque when tightening the screw.
- Check the module fits tightly after mounting.

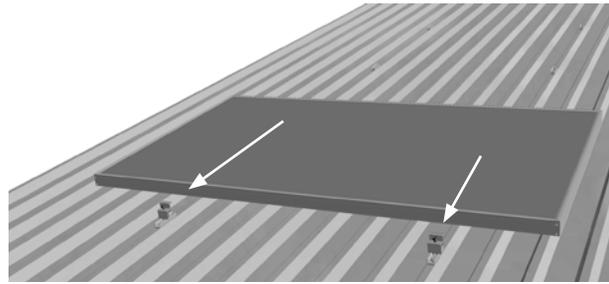


Image 9.2. - 5

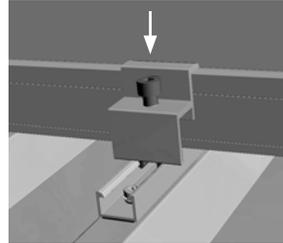


Image 9.2. - 6

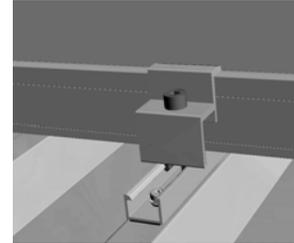


Image 9.2. - 7



CAUTION

Material damage due to incorrect mounting

Overloaded thin sheet-metal screws can pull out.

- Pay attention to correct positioning of the module end clamp. the Clickstone must be positioned between the two thin sheet-metal screw of the rail element.

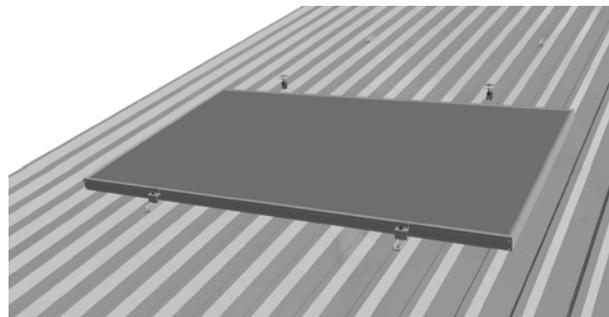


Image 9.2. - 8

9.3. Fastening the Modules on the Inner Side

Two module clamps are fastened between two modules.

Mounting steps:

- Insert the Clickstone of the module clamp into the channel of the rail.
- Push the module clamp all the way to the frame of the already mounted module.
- Push the second module to the module clamp and align.
- Tighten the screw (torque 8 Nm) and thus clamp the modules.

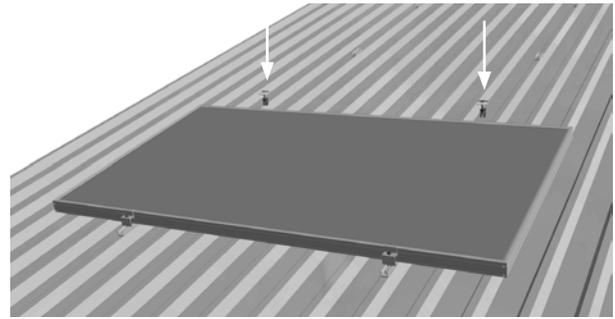


Image 9.3. - 1

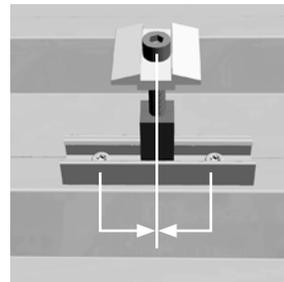


Image 9.3. - 2

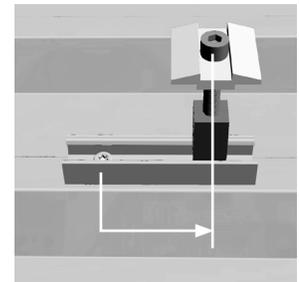


Image 9.3. - 3

Correct position of the module clamp: positioned so as to sit between the thin sheet-metal screws.

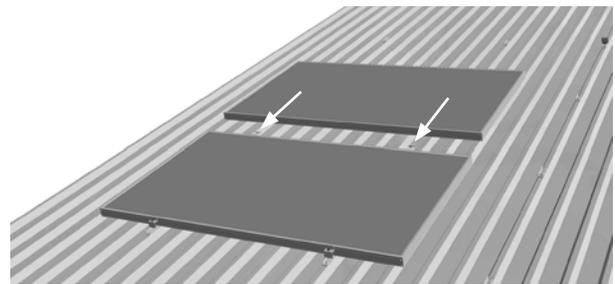


Image 9.3. - 4

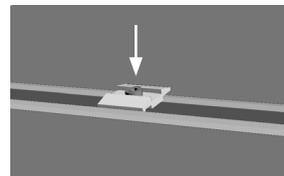


Image 9.3. - 5

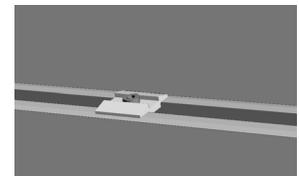


Image 9.3. - 6

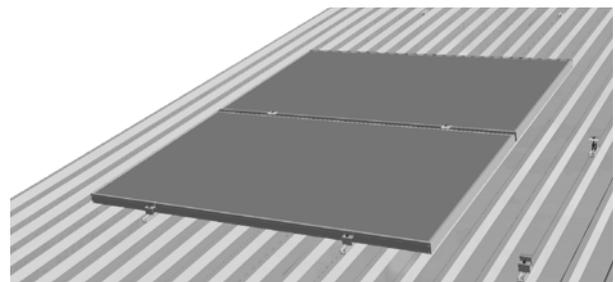


Image 9.3. - 7



CAUTION

Material damage due to incorrect mounting

Incorrectly fastened modules can fall and be damaged.

- Make sure the Clickstones click in correctly.
- Push the module clamp all the way to the module.
- Adhere to the stipulated torque when tightening the screw.
- Check the module fits tightly after mounting.



CAUTION

Material damage due to incorrect mounting

Overloaded thin sheet-metal screws can pull out.

- Pay attention to correct positioning of the module clamp. The Clickstone must be positioned between the two thin sheet-metal screws of the rail element.

9.4. Fastening Additional Module Rows

Mounting steps:

- Slide the modules of the other columns sideways to the modules of the outer row. For optical reasons you can also keep a distance between the module columns.



NOTE!

Use e.g. a module clamp as a distance gauge. This way you will achieve identical horizontal and vertical distances between the modules.

- Fasten the modules analogously to the 1st column with module end clamps and module clamps (see 9.2. and 9.3.).

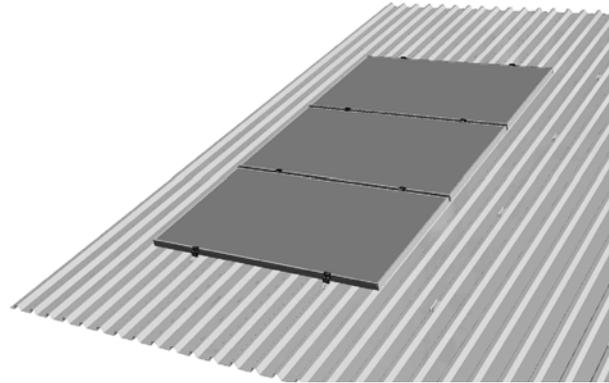


Image 9.4. - 1

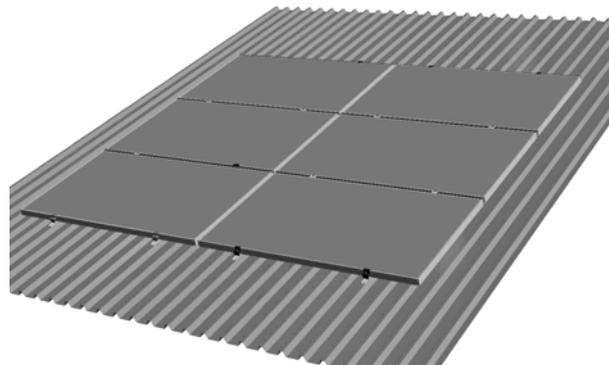
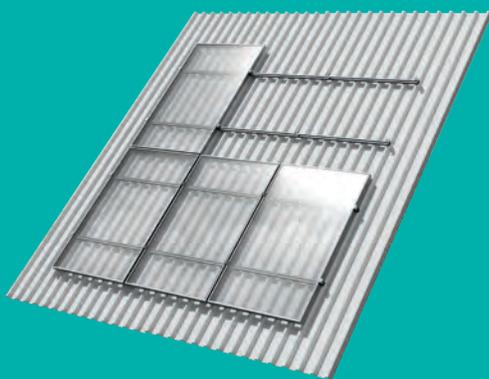


Image 9.4. - 2



**mounting
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