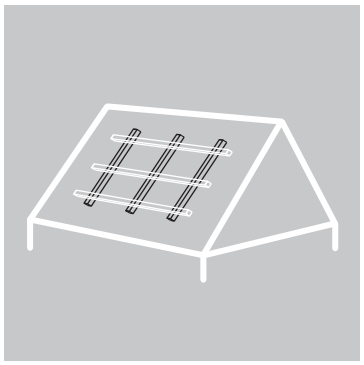
Solar products
Installation instructions

MSE 210
On-roof mounting system



SCHÜCO

SCHÜCO

Dear Customer,

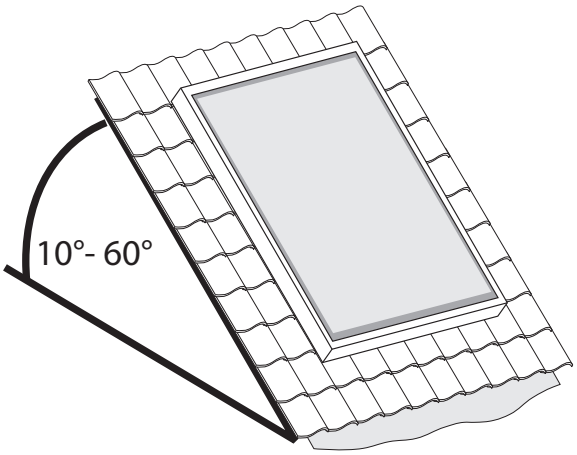
Thank you for choosing Schüco solar products and placing your trust in our company.

Prior to first installation, we recommend you attend a training course at our training centre or, if this is not possible, that you arrange for on-site training from one of our service engineers.

Before installation, please read the general information and safety guidelines contained in these instructions.

Schüco requires that installation only be carried out by technically qualified and authorised personnel with a recognised qualification (verified by a state or national body) or the appropriate expertise in the relevant technical field.

Product description
The mounting system developed by Schüco is used to securely fix Schüco PV modules to roofs with a roof pitch of 10° to 60°. Please also adhere to the MSE 200 design guide (259 711).



Proper use

The Schüco mounting system for Schüco PV modules has been developed and constructed in line with the latest technology and recognised safety regulations. The mounting systems must only be used in accordance with their stated structural capability.
An alternative use or a use beyond this remit is not in accordance with its purpose. The mounting systems are not for mobile use. Sunlight must not be directed onto the surface of the module by reflection or through a lens.

Incorrect use can result in the death or serious injury of the user or a third party, and may damage the appliance, the installation or other material assets. The manufacturer/ supplier shall not be liable for any resulting damage. The user alone shall bear the risk.

Correct usage also includes adhering to the installation and operating instructions and installation instructions for additional materials.

Accepted practice as usually codified in standards, guidelines, specifications, general and technical regulations laid down by local and national bodies, power supply companies, trade organisations and technical committees in the relevant sector must be followed.

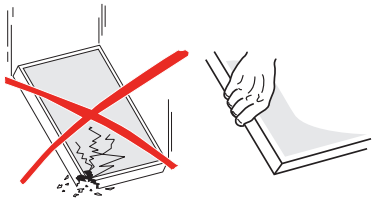
The installation of solar units may make increased demands in terms of watertightness with regard to roof, wall and sealing and this must be taken into account accordingly.

Disposal

Dispose of the packaging in accordance with the relevant laws and technical regulations. Observe the environmental requirements with regard to recycling, re-use and disposal of consumables and components in accordance with DIN EN 378.

List of contents

Version 01 installation instructions: MSE 210 on-roof • Art. No. 259 715 • 02.2010 - 01



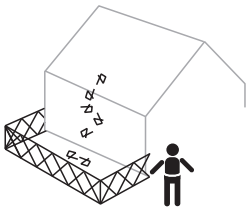
Handle with care.

Safety straps are also available from Schüco, Art. No.: 221 522

Warning: do not damage the cable.

Do not fix safety straps to the mounting system.

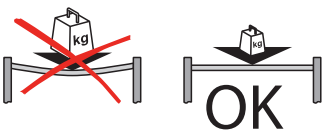
Wear protective gloves.



Section off the site and secure against falling objects.

Wear a safety helmet.

Ensure that you have access to a first aid kit.



Warning: do not damage the cable.

Explanation of pictograms used

Dangers

Danger! Risk of death or injury

Warning! Risk of damage to health, environment and product

Important! Risk of damage to the environment and product

Danger! Risk of death or injury from electric shock.
Before working with electrical devices, first disconnect the device from the mains (all connections).

Risk of scalding.

Hinweise

Important note

Only fix loosely in

Tighten

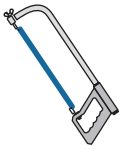
Materials to be provided by others

Weight/total weight (kg)

Tools required:

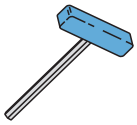
Pencil/chalk

Spirit level/plumb line

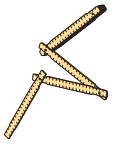


Metal saw for cutting mounting rails to length

Allen key;
A/F 6 (249 745)



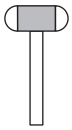
Allen key with T-handle; A/F 6 (249 744)



Folding rule/tape measure

Screwdriver (flat blade/cross-head)

Cordless screwdriver/drill



Rubber mallet

Also required:

Suitable hexagonal wood screws
For fixing the mounting system to the roof construction.

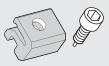
Overview: on-roof product range


BP 085 S (259 721)

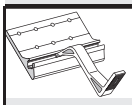

BP 130 S (259 724)


BP 160 S (259 725)

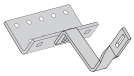

BP 215 S (259 726)

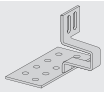

Anti-slip device for frame type 3
(257 117)

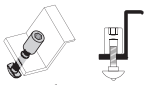
Alternative roof anchors

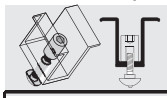

Roof anchor "pantile 3.1-Al" - OneTurn 22 required
(256 305)


Roof anchor "pantile 8" stainless steel - OneTurn 18 required (256 315)


Roof anchor "pantile 10.2" stainless steel, rotated
- OneTurn 18 required -
(257 130 / 257 131 / 257 787 - 20/100/500 PU)


Roof anchor "pantile 13" stainless steel - OneTurn 18 required (259739)


OneTurn with end retaining clamp
(For Art. No., see retaining clamps)

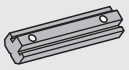

OneTurn with intermediate retaining clamp
(For Art. No., see retaining clamps)

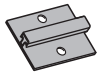
Alternative roof anchors


End retaining clamp
(For Art. No., see retaining clamps)


Intermediate retaining clamp
(For Art. No., see retaining clamps)


OneTurn 18 (256 494) - PU = 20
OneTurn 22 (256 040) - PU = 20


Connecting element including punching screws
(257 105)


Cruciform connector
(including 2 punching screws, 17.5 mm, and anchor block)


Anti-slip kit (including 1 punching screw, 17.5 mm)
[cruciform installation] (249 580)


Anti-slip device
(256 022)


Installation instructions
(259 715)


Solar cable
(231 036 / 231 173 / 231 174)


String cable


Cable duct
(256 041)


The roof anchors shown here are only an example from our range.
das unserem Sortiment.

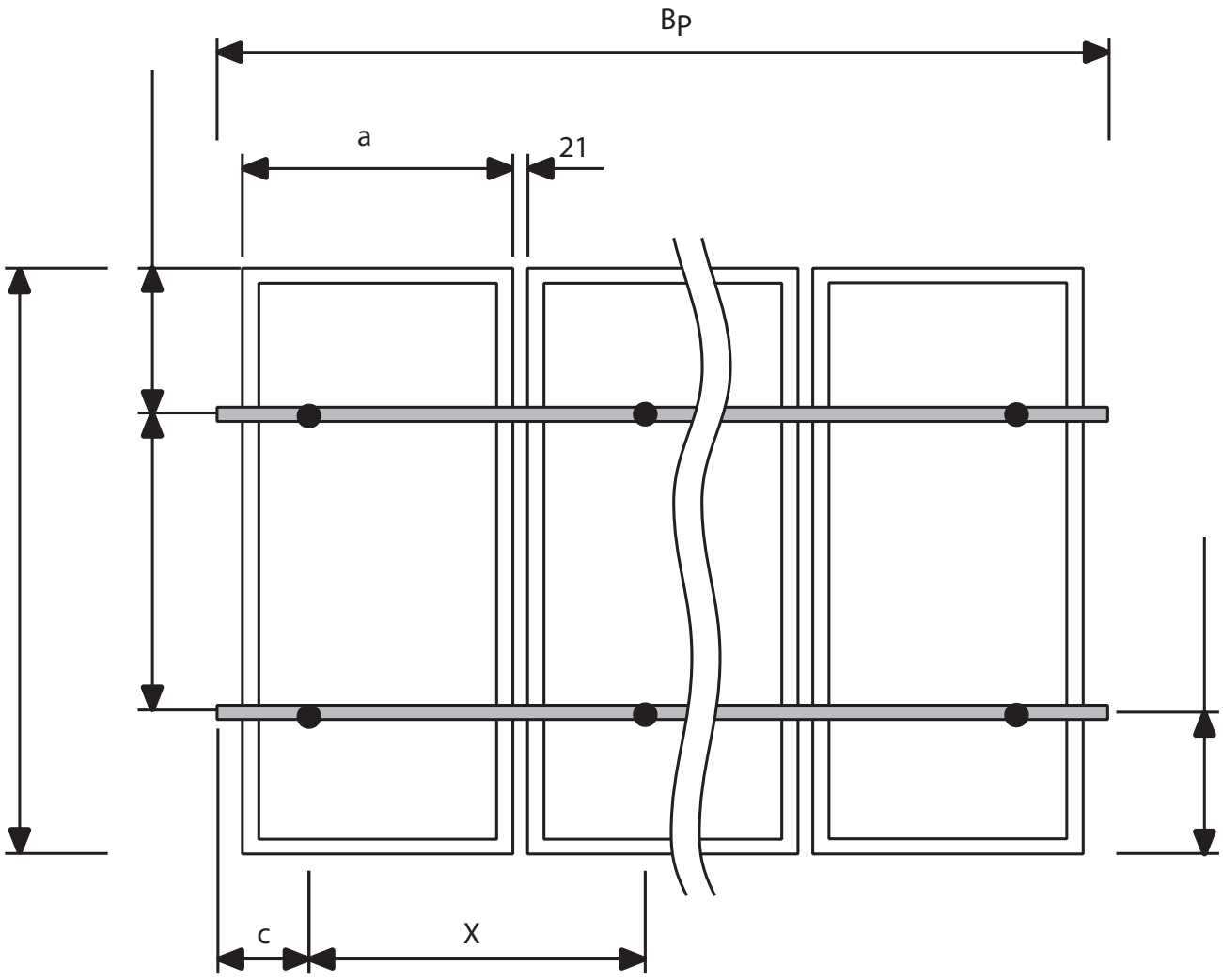
Maximum fixing intervals

Horizontal mounting rails

In general, the system specifier will configure the layout in advance. The maximum spacing can be derived from:

1. The selected module type
2. The location (installation location).

For more information, refer to design guide 259 711.



L = module length in metres
a = module width (m)
B_P = mounting rail length (m)
X = maximum fixing intervals (m)

c = maximum cantilever
c ≤ 0.15 * X when X ≤ 1000 mm
c ≤ 0.25 * X when X ≤ 2000 mm
c ≤ 500 mm when X > 2000 mm

Calculation of dimensions

The length of the mounting rails supplied is ~ 6180 mm

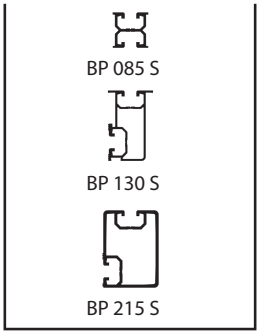
Mounting rail cutting
(per row of modules) = 22 mm + [number of modules x (module width + 21 mm)]

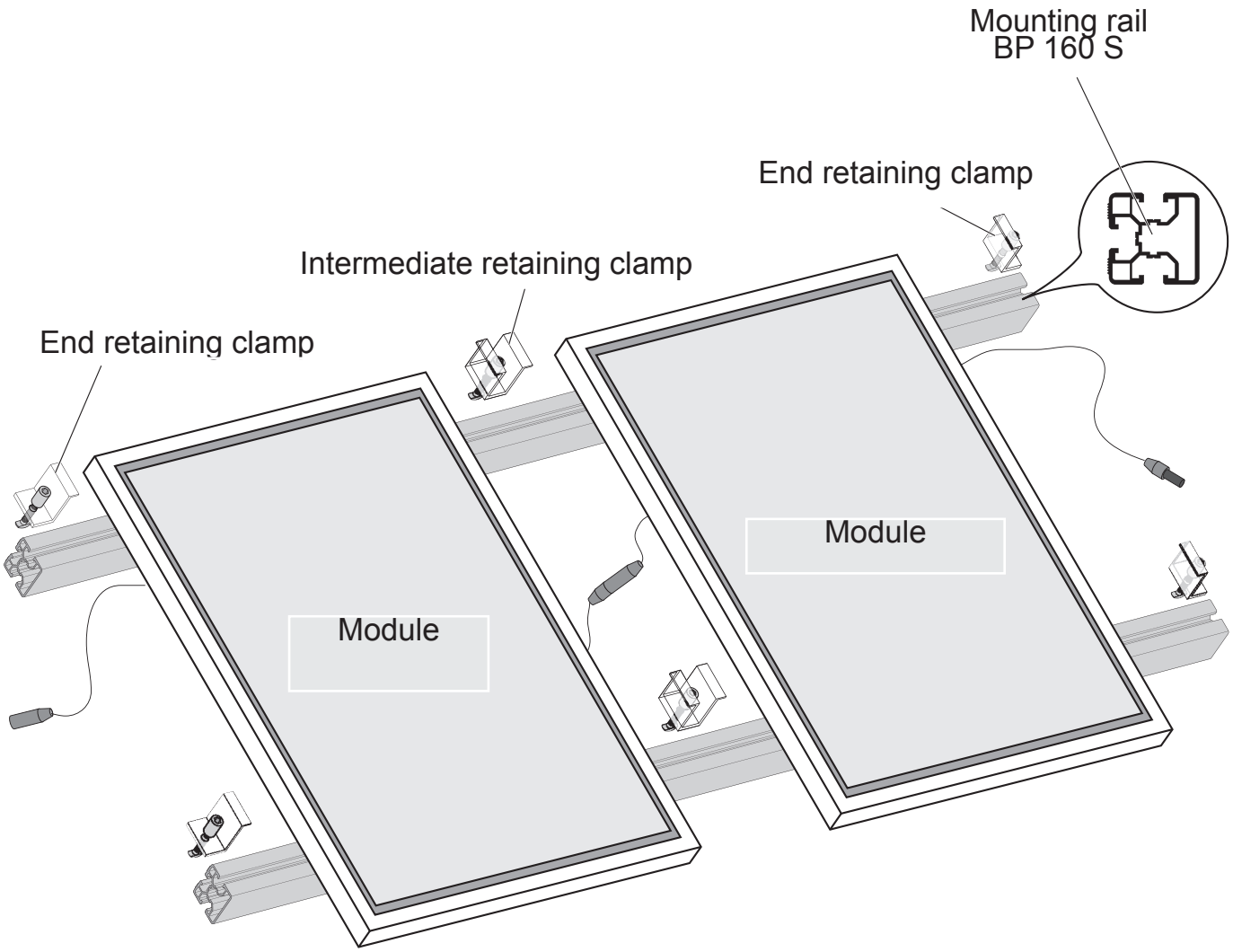
Example:

Number of modules:	6 modules
Arrangement:	Portrait, adjacent in a single row
Module dimensions:	L = 1495 mm ; W = 1001 mm
Cutting length:	22 + [6 x (1001 mm + 21 mm)] = 6154 mm
Required number of mounting rails:	2 retaining clamps
End retaining clamps:	4 per row of modules
Intermediate retaining clamps:	2 x (no. of modules -1)

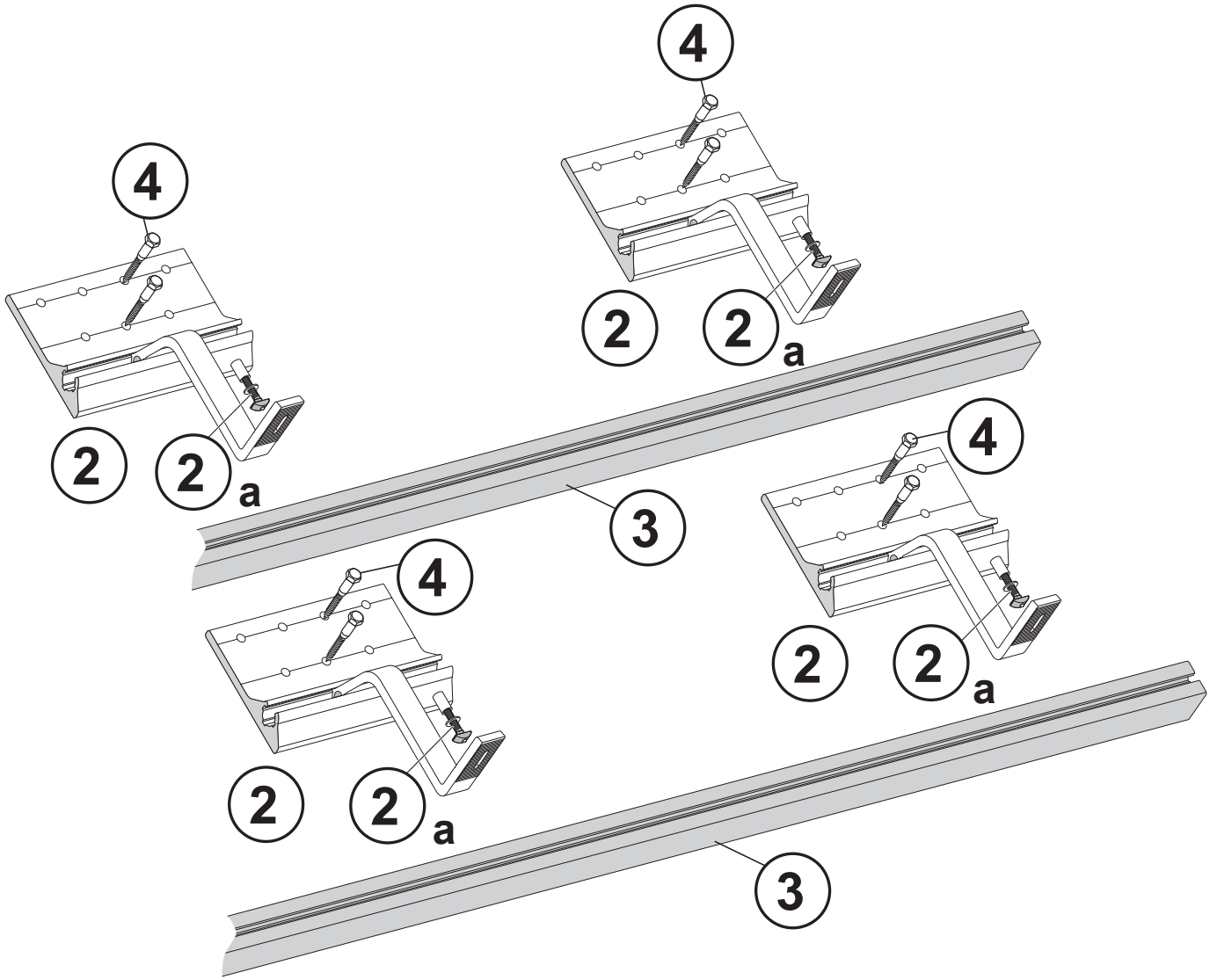
Overview: MSE 210 on-roof mounting system

Mounting rails which can be used





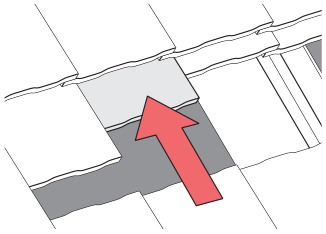
Installation of rafter-mounted fixing points



To be provided by the customer:
Screws for mounting battens and fixing points.
Lining material for roof rafters.
Ventilation tile.

2 Fixing point
2a OneTurn 22 (256 040)
3 Mounting rail
4 Hexagonal, wood screw

1



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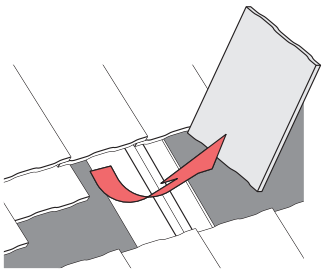

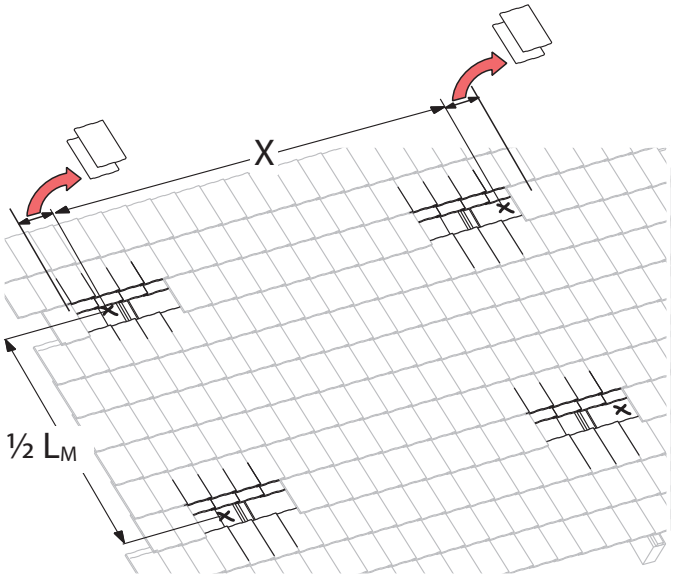

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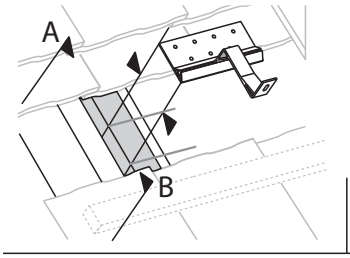

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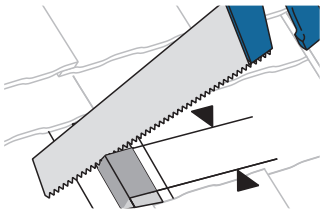

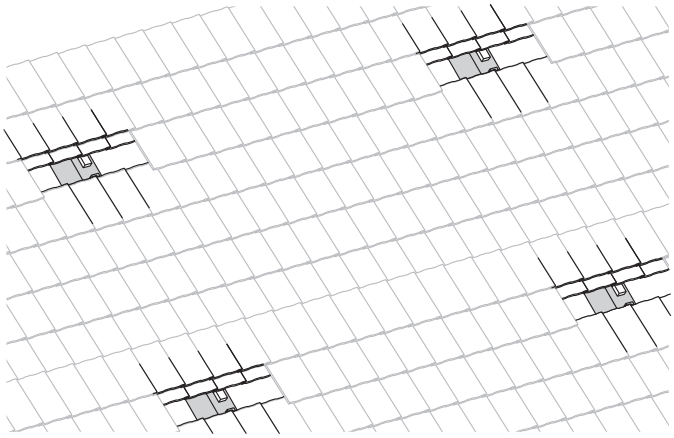

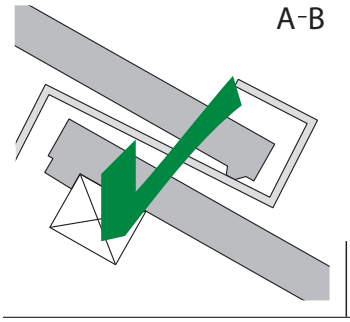

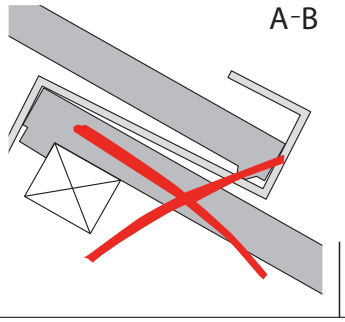

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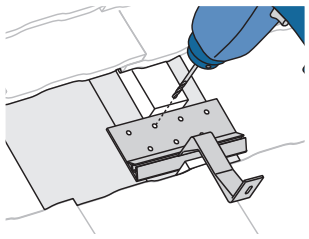

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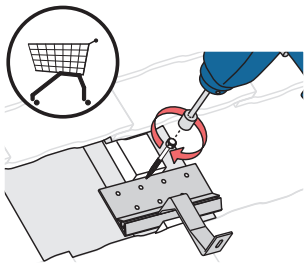

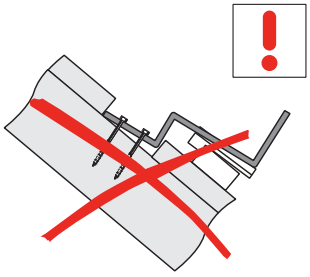

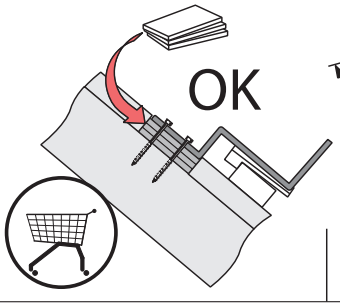

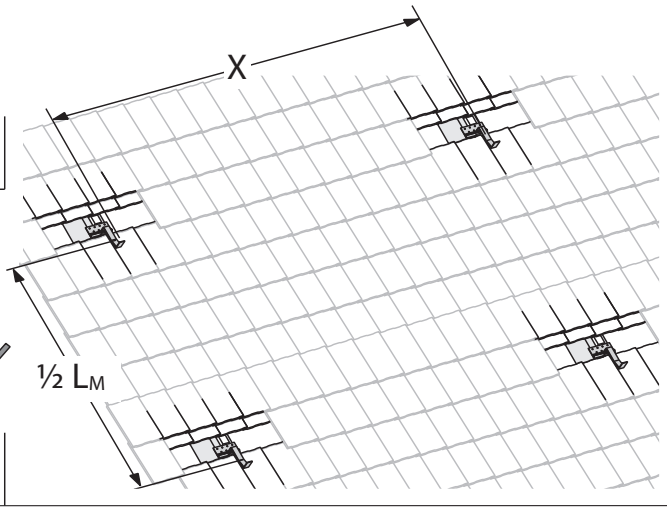

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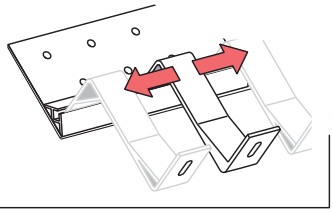

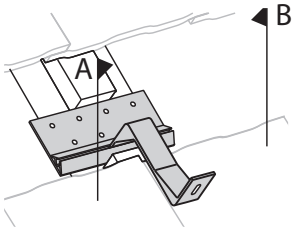

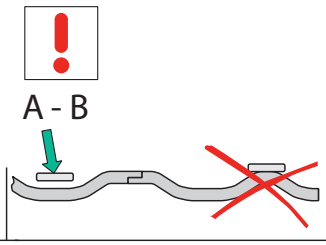

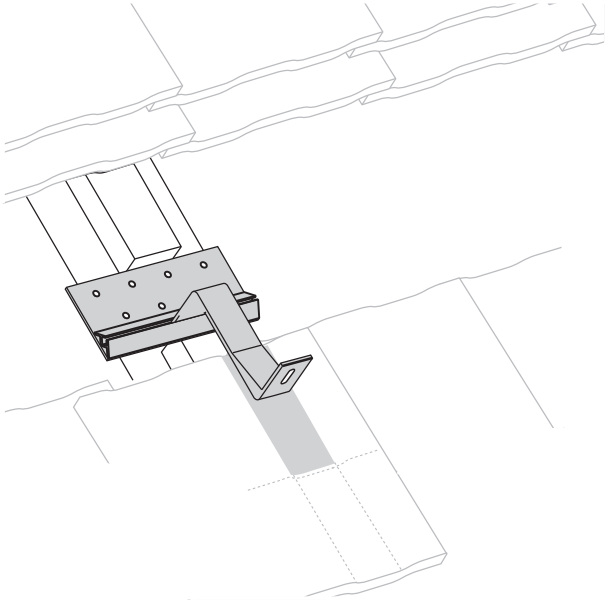

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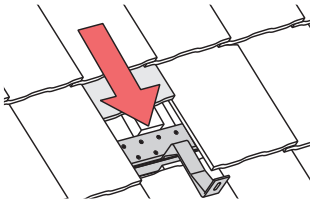

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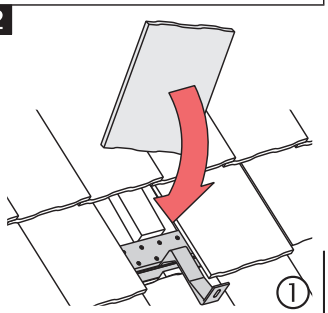

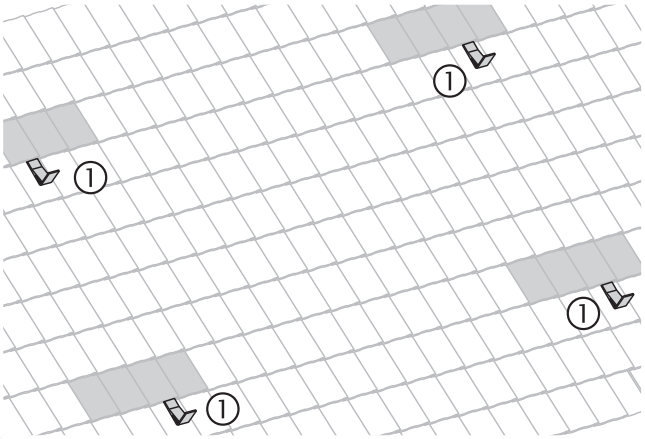

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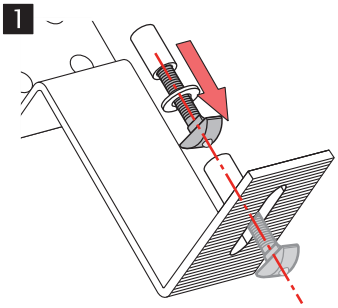

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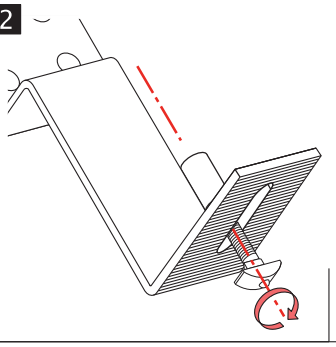

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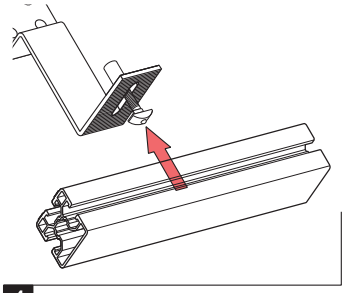

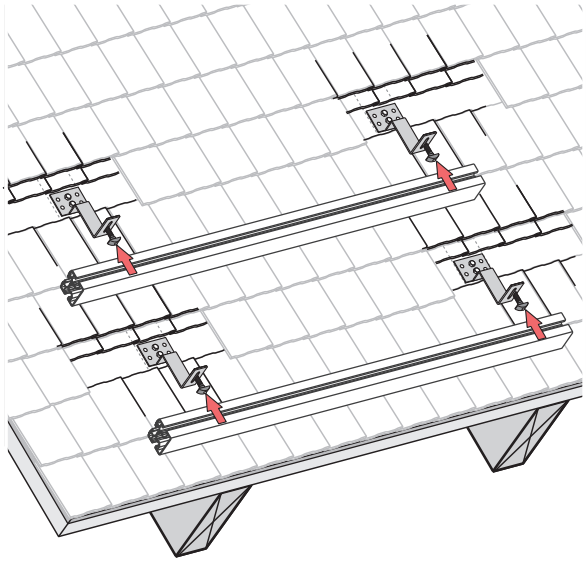

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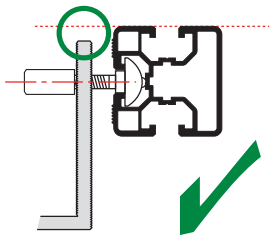

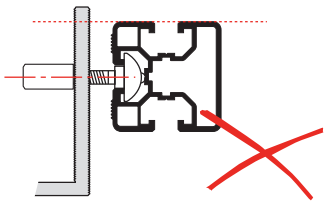

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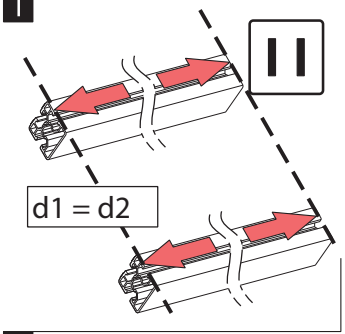
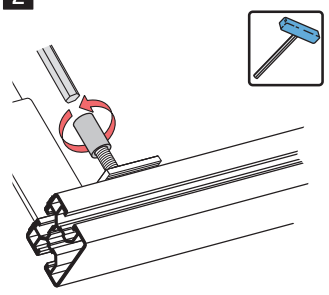
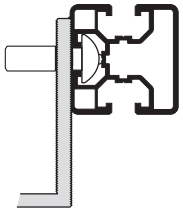


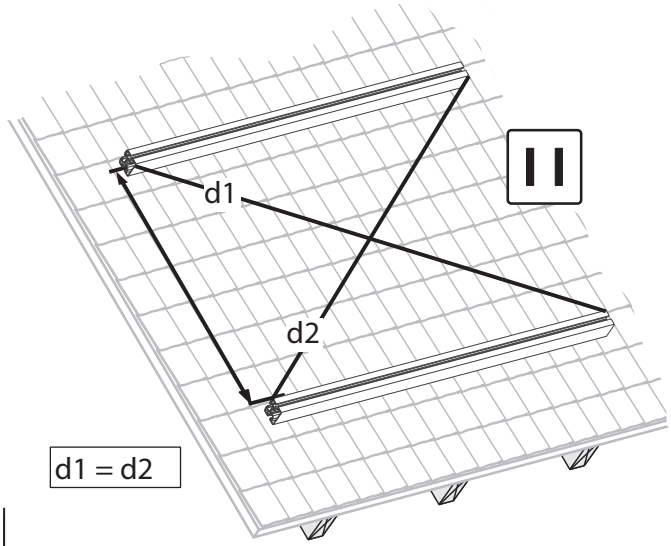
Locate the OneTurn by turning it 90° clockwise. The OneTurn screw head must be anchored at right angles to the mounting rail groove.

After aligning the mounting rails, tighten the threaded sleeves.

2







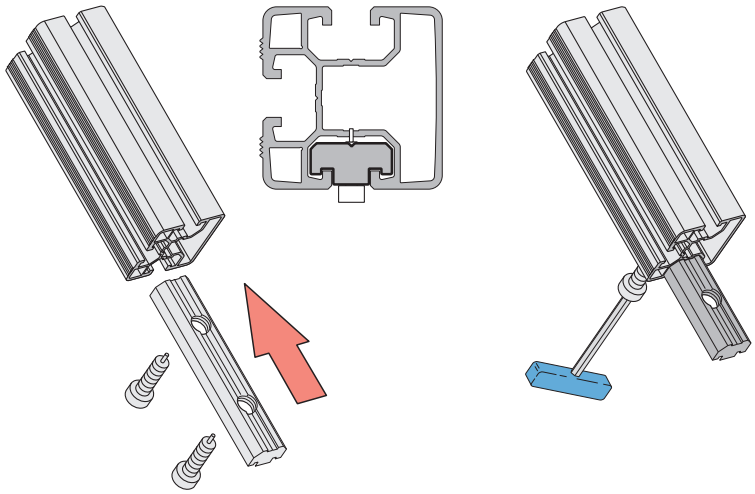
Coupling mounting rails

The connecting piece does not fulfil any structural function.

1. Slide half of the connecting element (257 105) into the mounting rail groove.

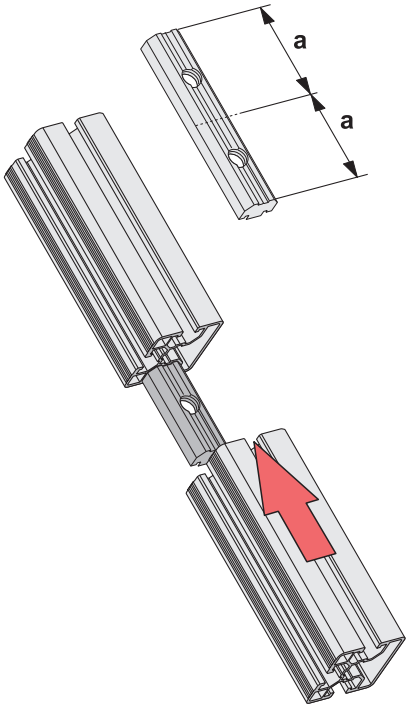
2. Tighten the screws.

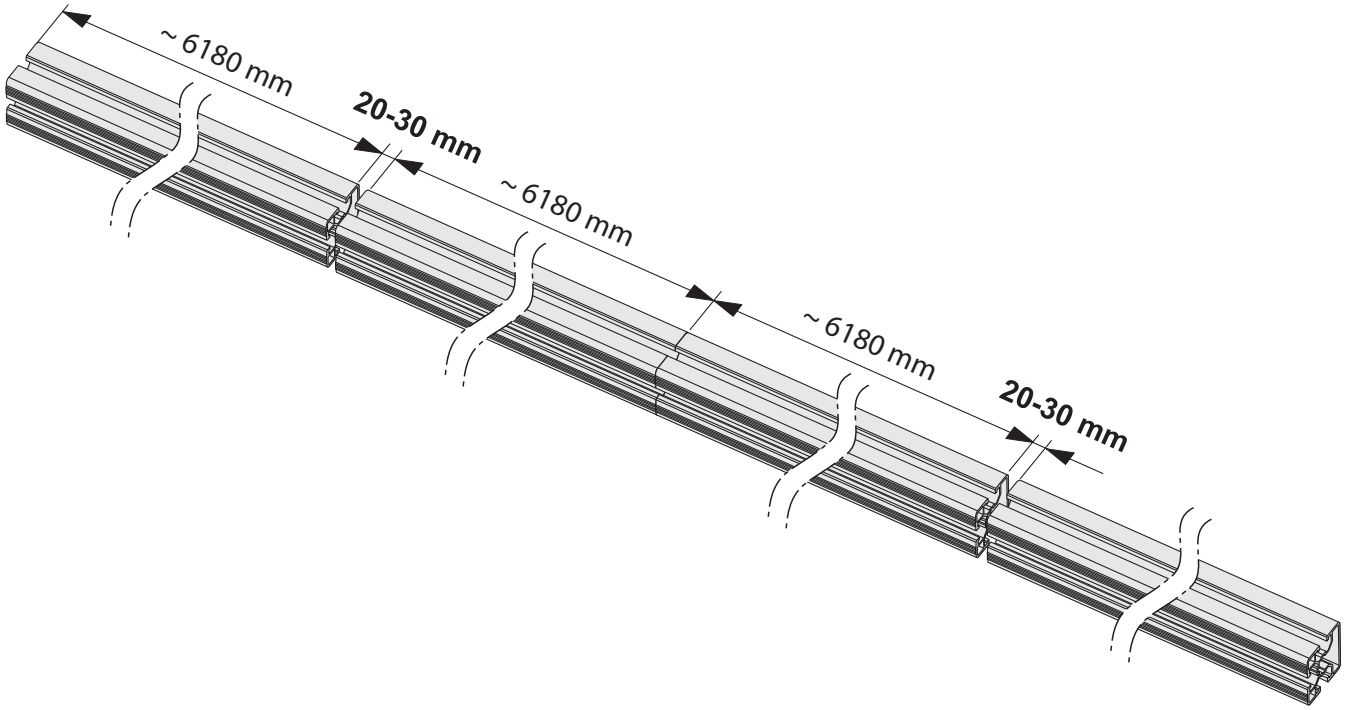
3. Slide the second mounting rail into the fixed connecting element.



Ensure that "sliding" mounting rail joints (the connecting element is only fixed using one screw) are always alternated with "butt joint" connections (the connecting element is fixed using two screws and the mounting rails can be butted together).

This ensures any temperature-related expansion of





Cruciform installation 1: system overview

Cruciform installation is another option for on-roof installation. Cruciform installation is characterised by an increased structural load-bearing capacity, which allows modules to be installed without placing them under stress.

Note:
For this type of cruciform installation, the modules can ONLY be installed in portrait orientation, adjacent to one another.
Only fixing points with a rotated connection can be used here.

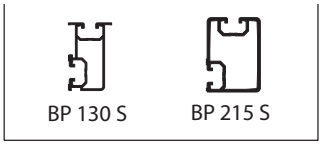
Refer to the "Maximum fixing intervals" page for dimensions.

Install the fixing points as close as possible to the crossover points of the mounting rails.

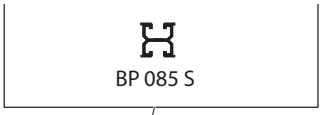
To prevent the load-bearing profiles from slipping down, the anti-slip device must be installed above the two last fixing points.
At least 3 per mounting rail and/or every 2 metres.

Install the anti-slip kit at the end of the mounting rails.
This will prevent the contour profiles from slipping horizontally.

Alternative mounting rails for use at the bottom:

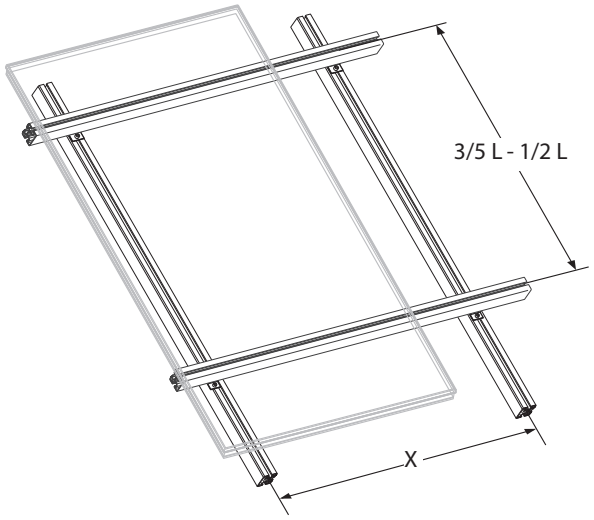


Alternative mounting rails for use at the top:



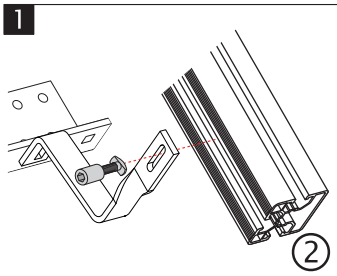
1 Vertical mounting rails
BP 130 S; BP 160 S; BP 215 S
1a Horizontal mounting rails
BP160 S; BP 085 S
2 Anti-slip kit
2a Cruciform connector
3 Only use rotated fixing points.
3a OneTurn
4 Anti-slip device

Cruciform installation 1: installing the load-bearing profile level



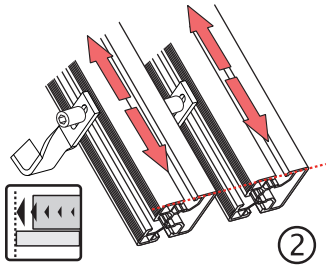
Install the vertical mounting rails on the fixing points at intervals of 'X' (see "Maximum fixing intervals").

1

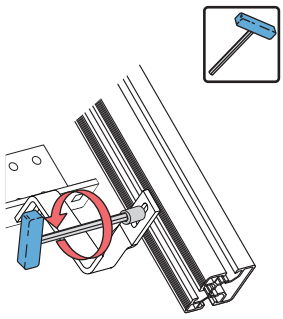


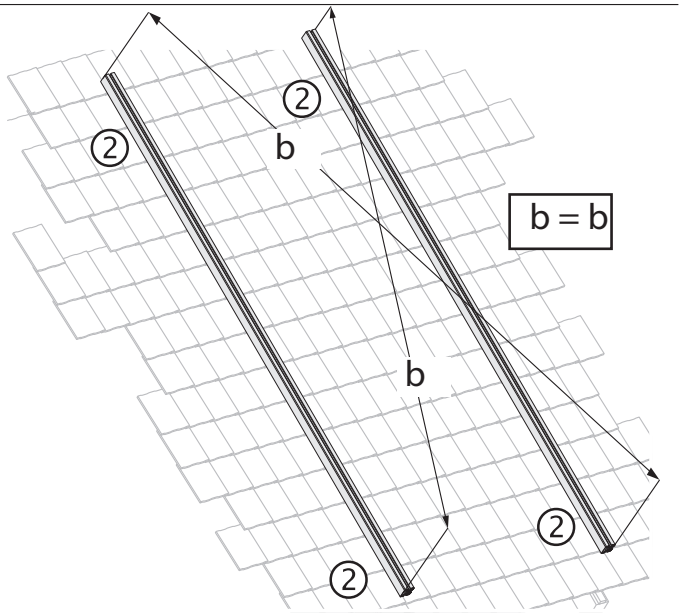
Locate the OneTurn by turning it 90° clockwise. The OneTurn screw head must be anchored at right angles to the mounting rail groove.
After aligning the mounting rails, tighten the threaded sleeves.

2

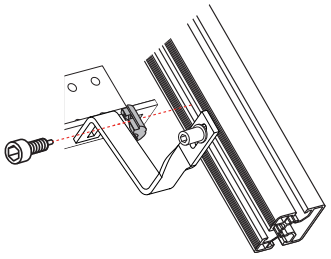


3





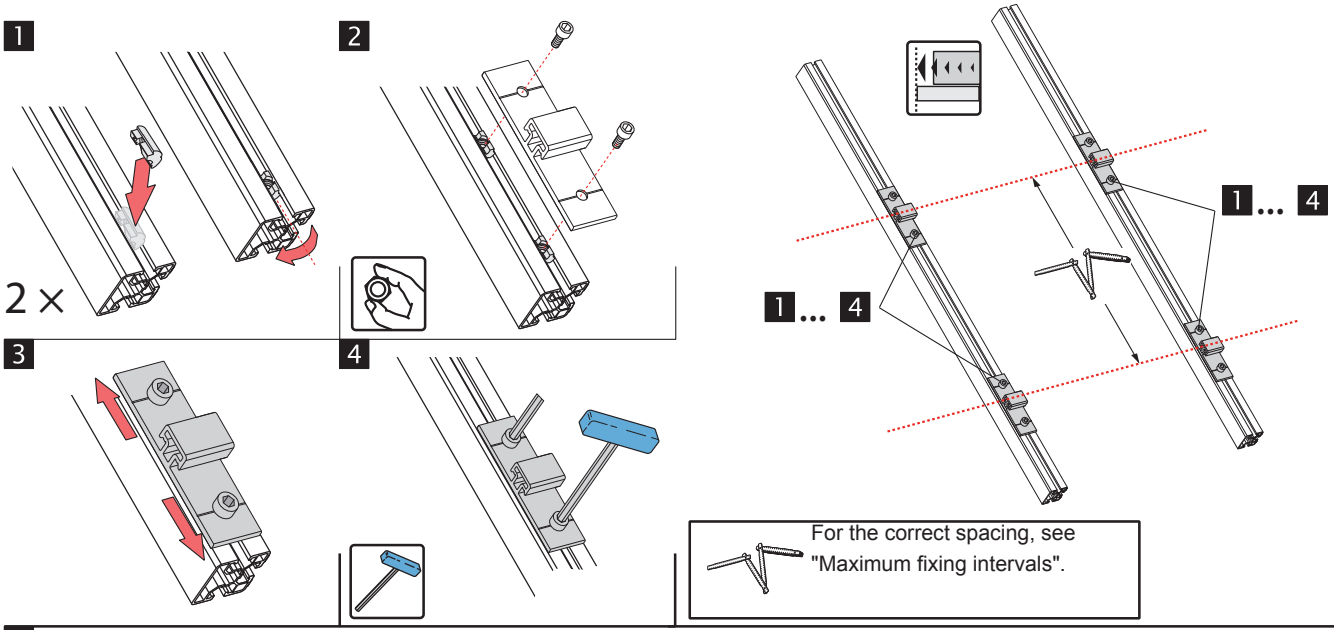
4



To prevent the load-bearing profiles from slipping down, the anti-slip device (256 022) must be installed above the two last fixing points.

At least 3 per mounting rail and/or every 2 metres.

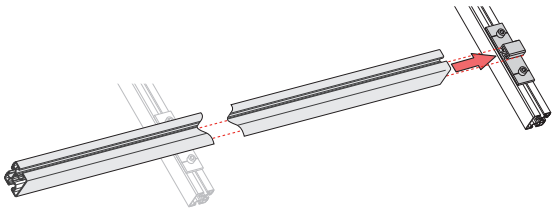
Cruciform installation 1: contour profile level



For the correct spacing, see "Maximum fixing intervals".

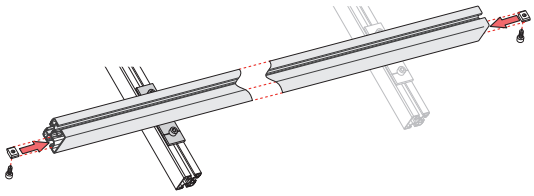
1

Slide the horizontal mounting rails onto the cruciform connectors.



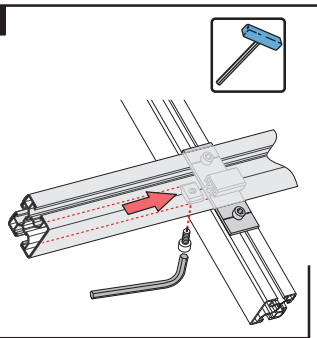
Alternatively, BP 085 S can be used as a horizontal mounting rail if the span widths are smaller.

2

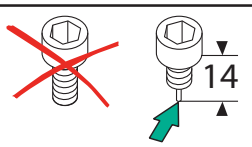


Insert the anti-slip device into the mounting rails.

3

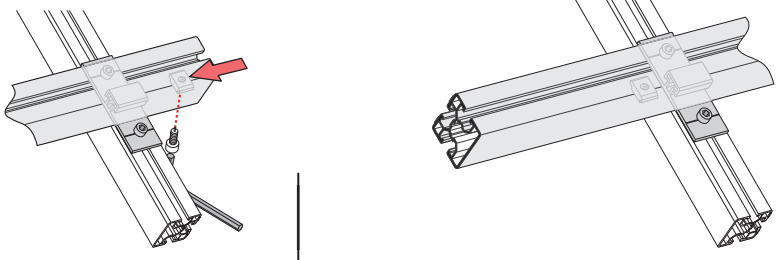


The anti-slip device must be securely fixed in the mounting rail using the punching screw. Ensure that there is sufficient distance from the cruciform retaining clamp (approx. 20-30 mm) so that no damage arises if there is thermal expansion in the mounting rail.



Make sure the punching screws are tightened properly. In order to make an interlocking and structurally effective joint, screw in the punching screws beyond when you first feel and hear them resist.

4



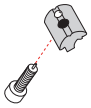
Cruciform installation 2: system overview

Cruciform installation is another on-roof installation option.
It is characterised by an increased structural load-bearing capacity, which allows modules to be installed without placing them under stress.

Note:
For this type of cruciform installation, the modules can **ONLY** be installed in landscape orientation, one above the other.

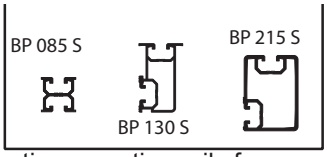
Refer to the "Maximum fixing intervals" page for dimensions.

For cruciform installation, the fixing points must be installed as close as possible to the crossover points, keeping to the vertical run of tiles.

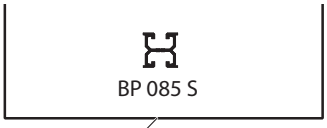


Insert the anti-slip device into the mounting rails.

Alternative mounting rails for use at the bottom:



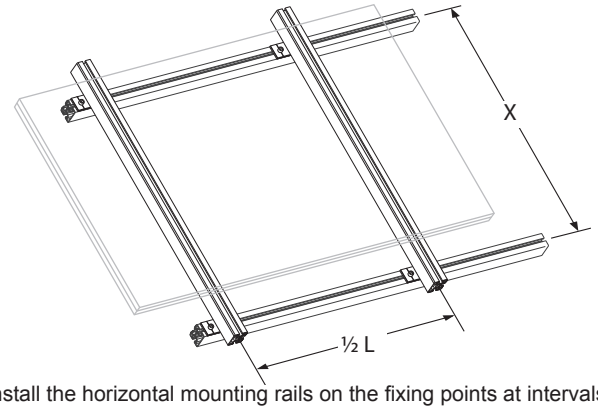
Alternative mounting rails for use at the top:



1 senkrechte Basisprofile BP 160 S; BP 085 S
1a waagerechte Basisprofile BP 130 S; BP 160 S;

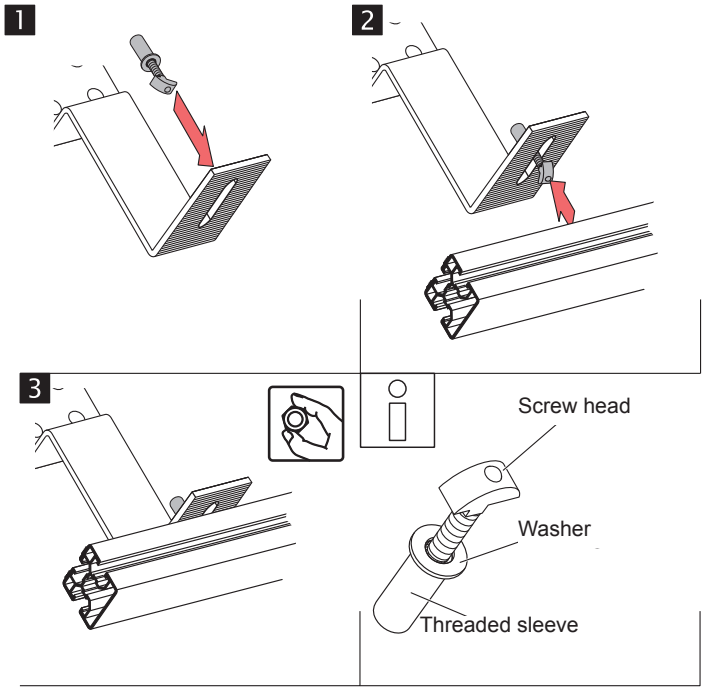
1 Vertical mounting rails
BP 160 S; BP 085 S
1a Horizontal mounting rails
BP 130 S; BP 160 S; BP 215 S
2 Anti-slip device
2a Cruciform connector
3 Fixing point
3a OneTurn

Cruciform installation 2: installing the load-bearing profile level

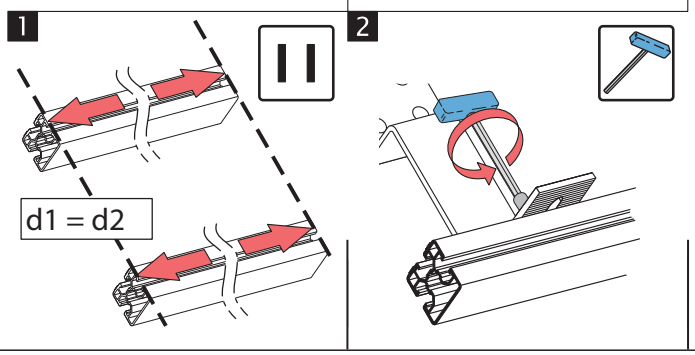


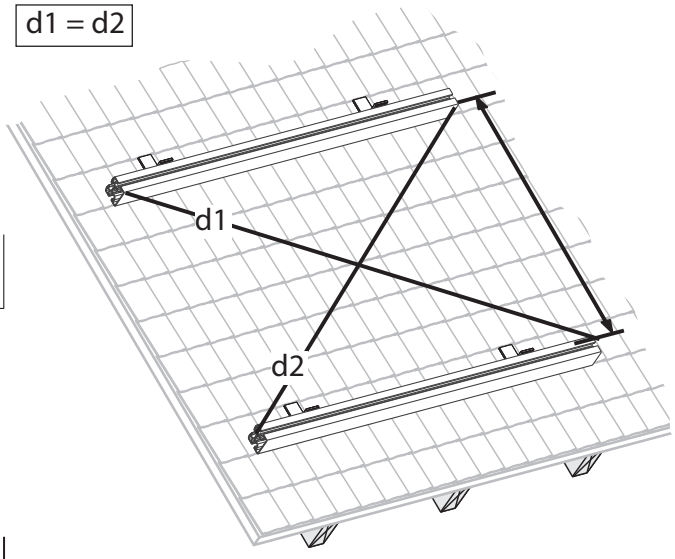
Install the horizontal mounting rails on the fixing points at intervals of 'X' (see "Maximum fixing intervals").

Horizontal mounting rail installation



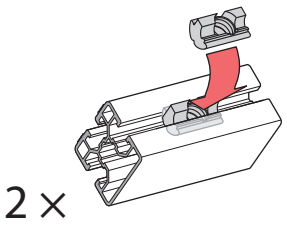
Locate the OneTurn by turning it 90° clockwise.
The OneTurn screw head must be anchored at right angles to the mounting rail groove.
After aligning the mounting rails, tighten the threaded sleeves.



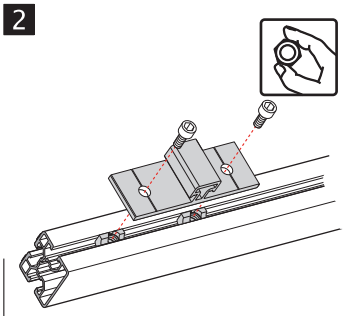


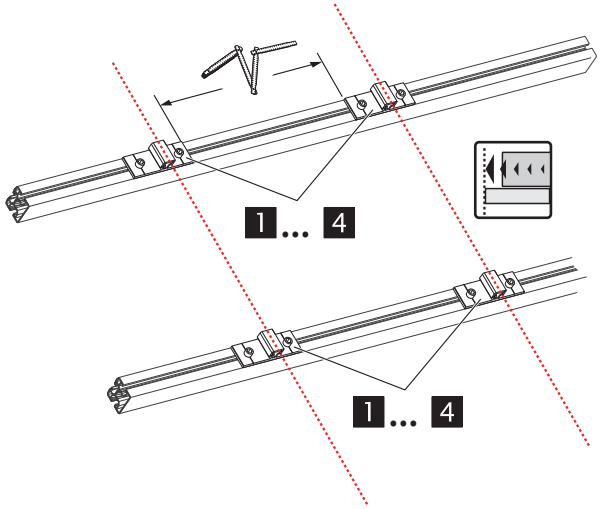
Cruciform installation 2: contour profile level

1

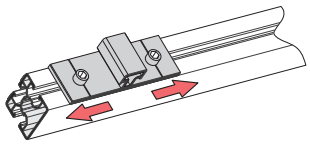


2

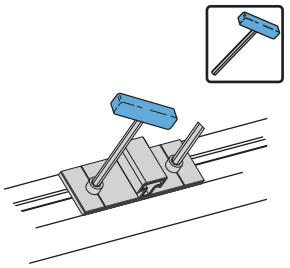




3

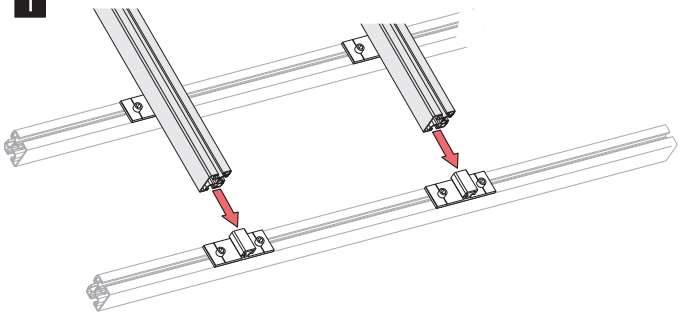


4



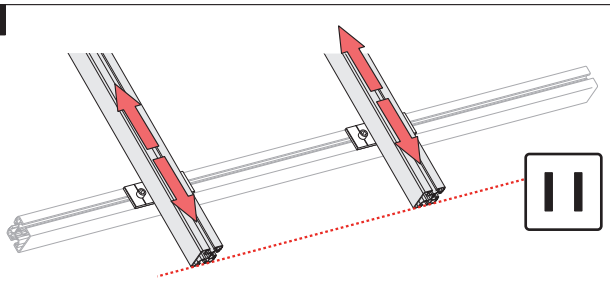
For the correct spacing, see "Maximum fixing intervals".

1

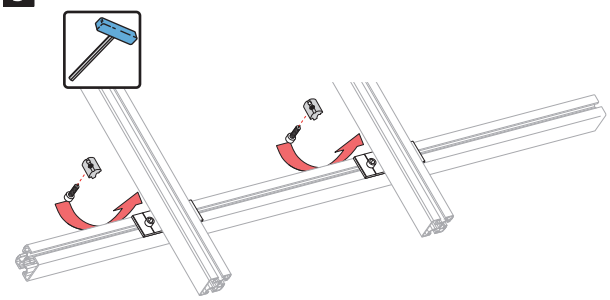


Slide the vertical mounting rails onto the cruciform connectors.

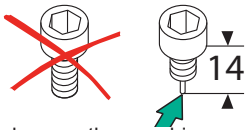
2



3



Install the anti-slip device above the cruciform connector to prevent the mounting rails from slipping down.
Use at least 3 anti-slip devices per mounting rail and/or every 2 metres.

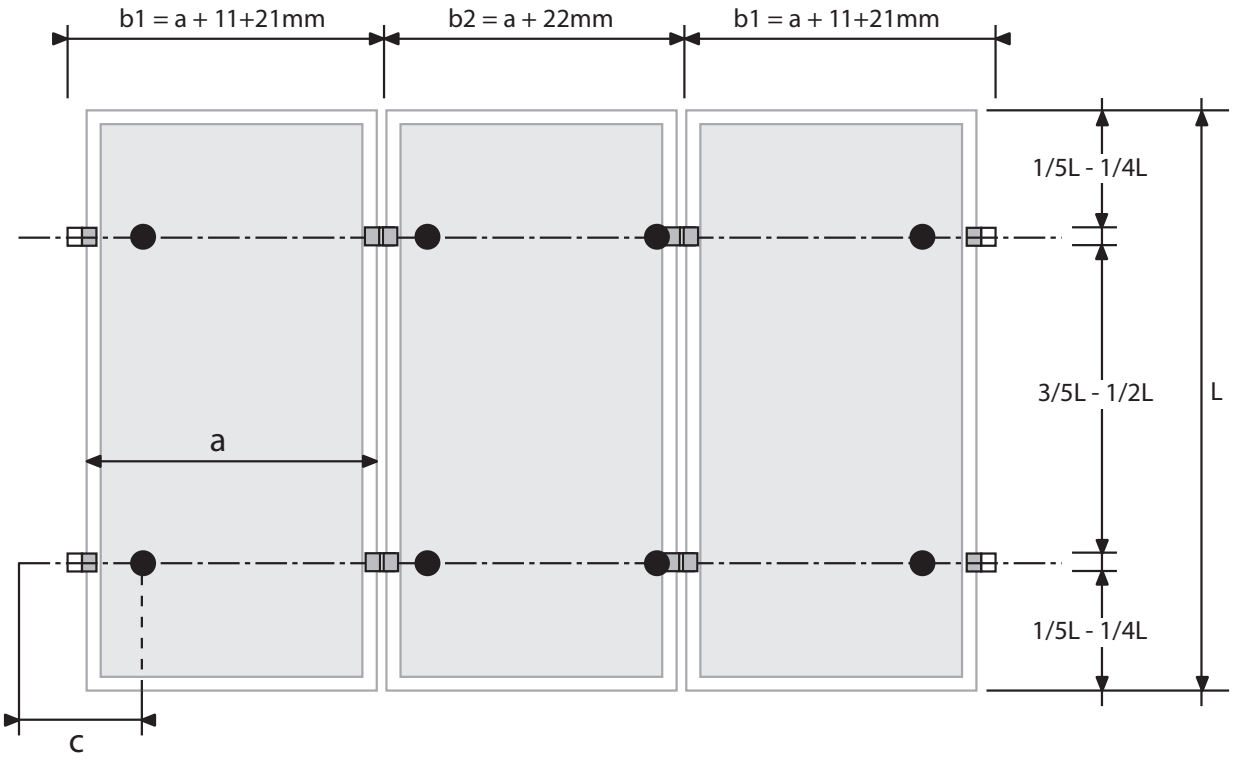


Make sure the punching screws are tightened properly. In order to make an interlocking and structurally effective joint, screw in the punching screws beyond when you first feel and hear them resist.

Module installation - type 1

● = Fixing point

The following applies to end retaining clamps: b1 = a+10.5+22 mm
The following applies to intermediate retaining clamps: b2 = a+21 mm



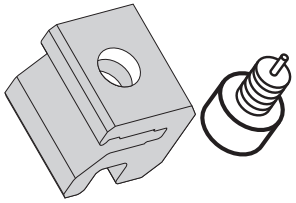
L = module length in metres
a = module width (m)
b = module spacing (mm)

c = maximum cantilever
c ≤ 0.15 * X when X ≤ 1000 mm
c ≤ 0.25 * X when X ≤ 2000 mm
c ≤ 500 mm when X > 2000 mm

For more information, refer to design guide 259 711.

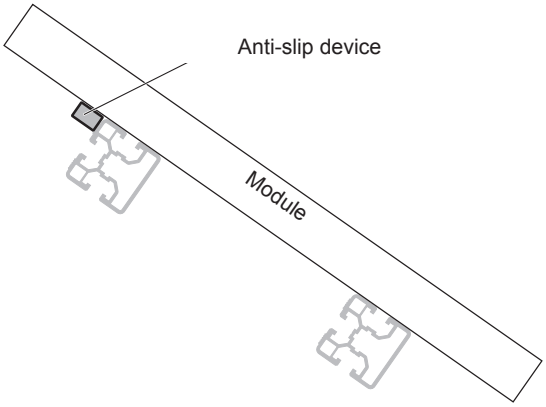
Installing the module anti-slip device

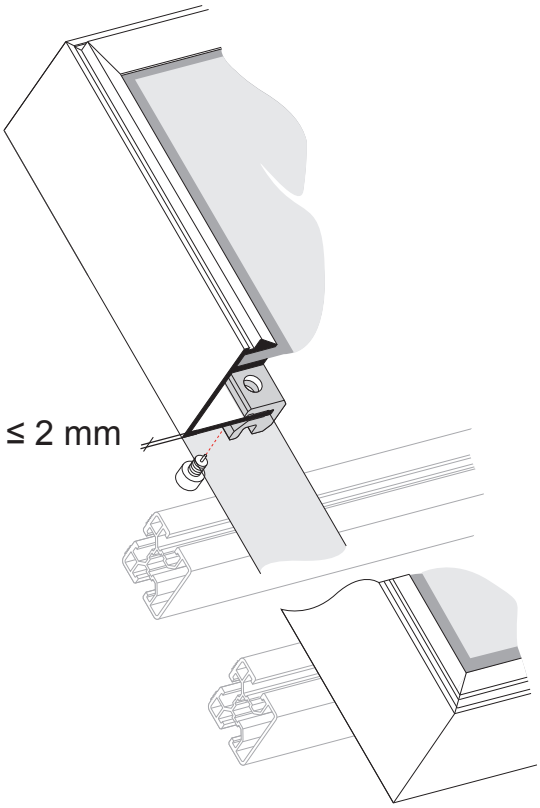
The anti-slip device is required for roof pitches > 25°.



Anti-slip device (257 117) including M8 x 14 punching screw

Anti-slip devices must always be positioned above a mounting rail so that the modules are secured against slipping.

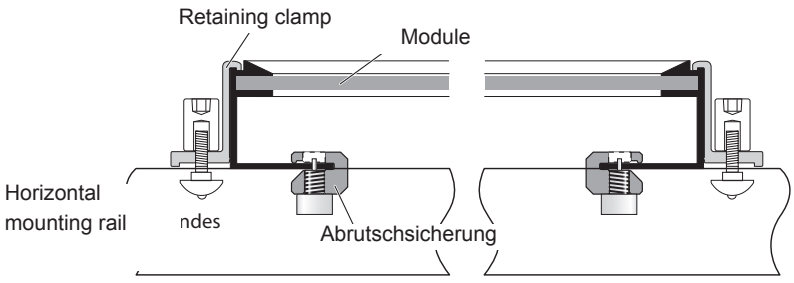


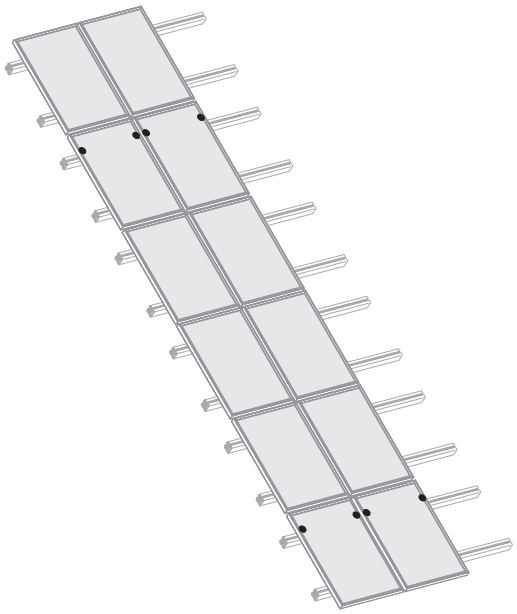


The anti-slip device is only suitable for module frames with a max. material thickness of 2 mm.

Insert M8 x 14 punching screws in the module frame.

Install 2 anti-slip devices per module. 4 modules can therefore be mounted above one another for snow loads up to 1.1 kN/m² (max. 1.3 kN per anti-slip device).





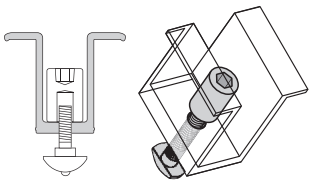
Installing the first module

OneTurn

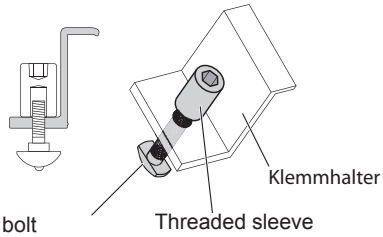
Schüco has developed the OneTurn fixing system to mount modules quickly and securely.

To make installation work even easier, you need the Schüco Allen key. This enables you to install all the retaining clamps with one hand.

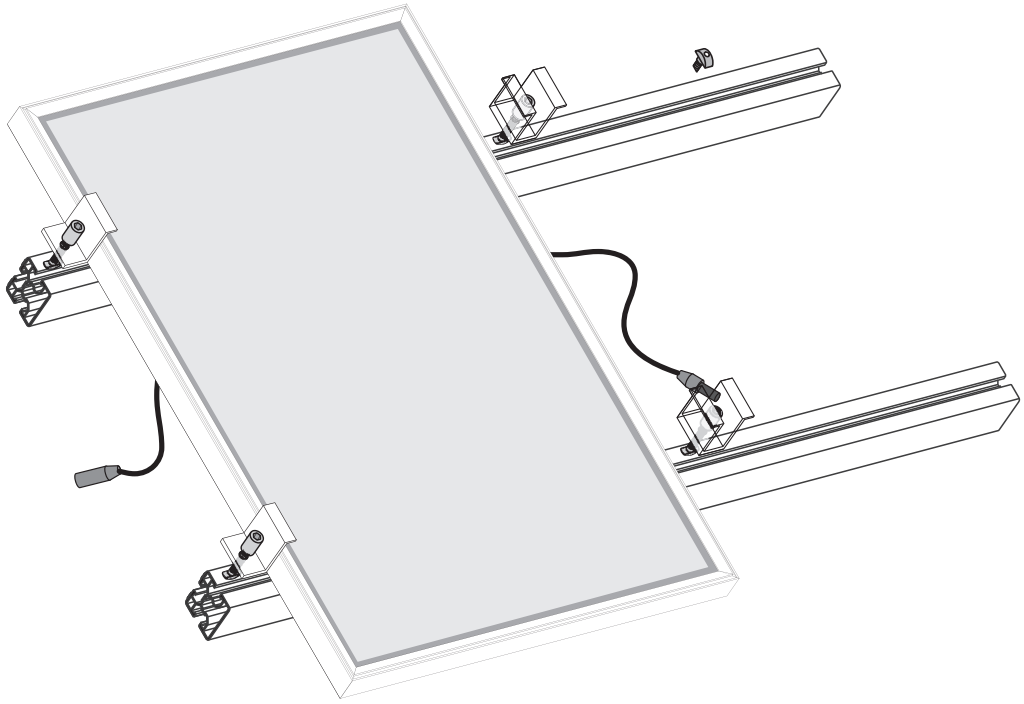
OneTurn with intermediate retaining clamp



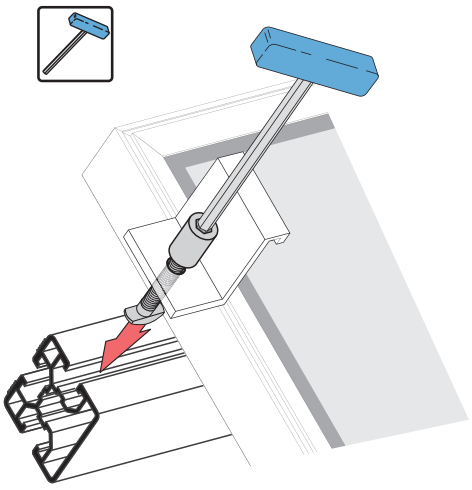
OneTurn with end retaining clamp



Always ensure that the module cables are laid securely to prevent the cable from becoming damaged.

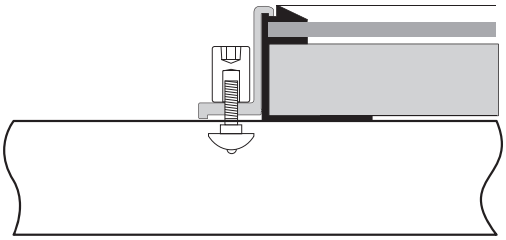


1

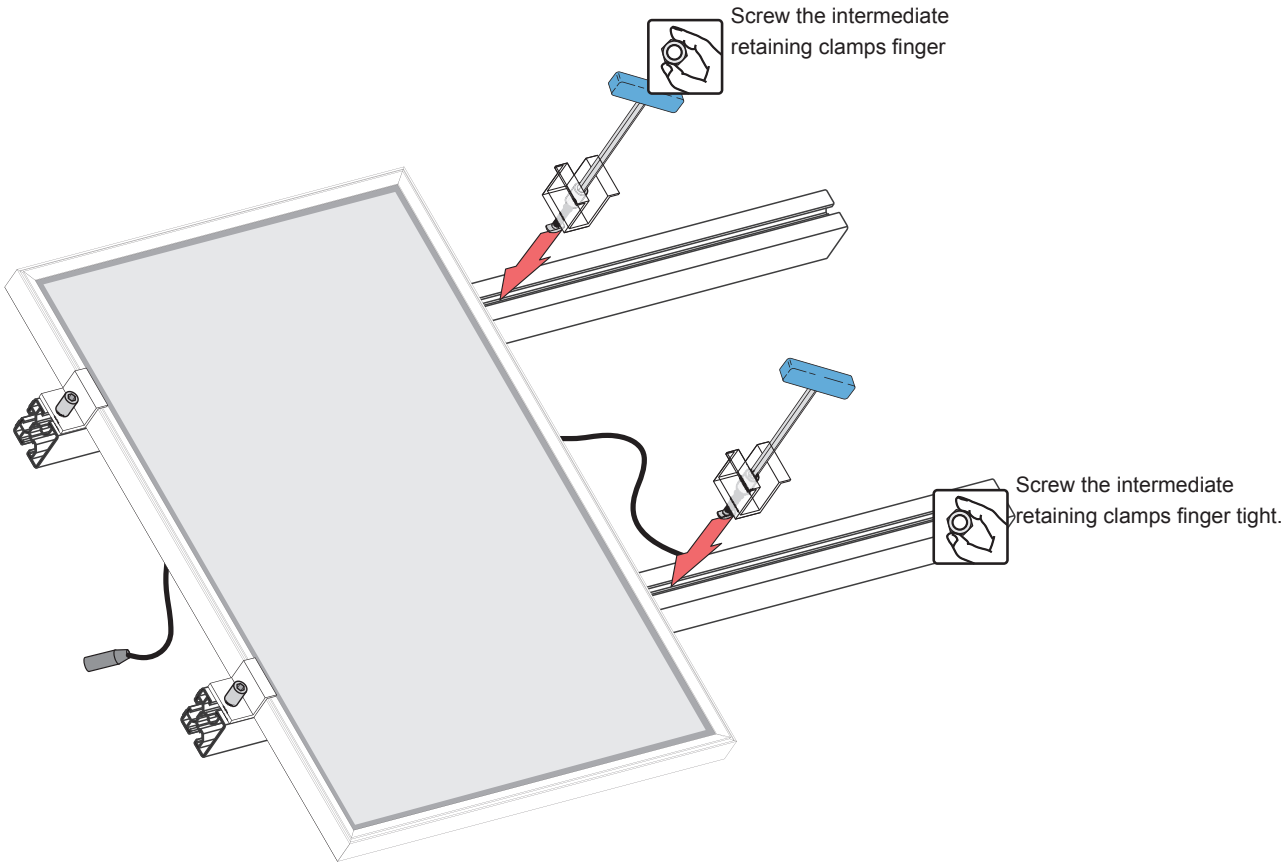


Position the end retaining clamp flush with the module frame. Locate the OneTurn by turning it 90° clockwise.

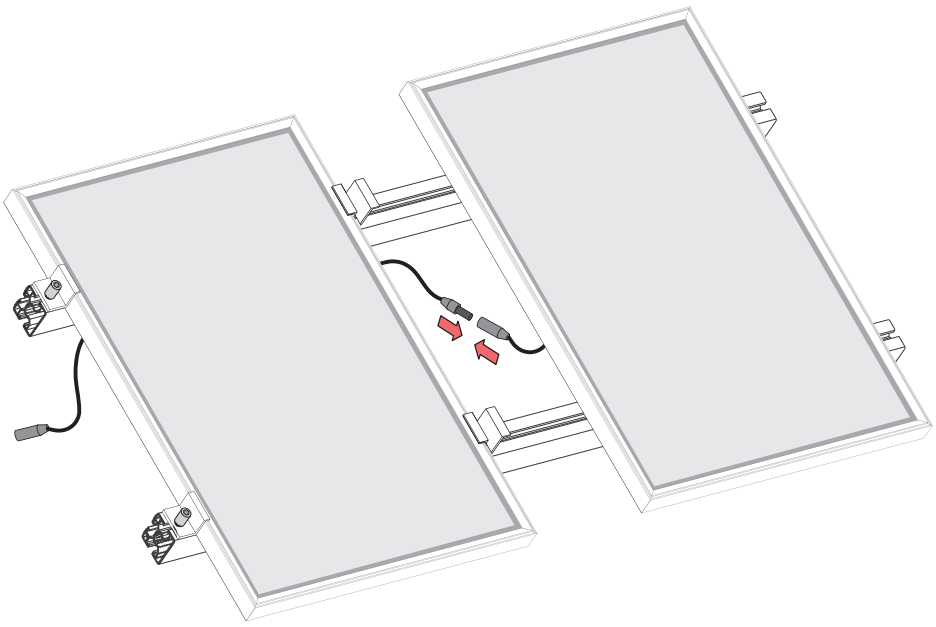
Then tighten the threaded sleeve.



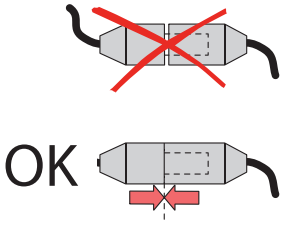
Fixing the second module



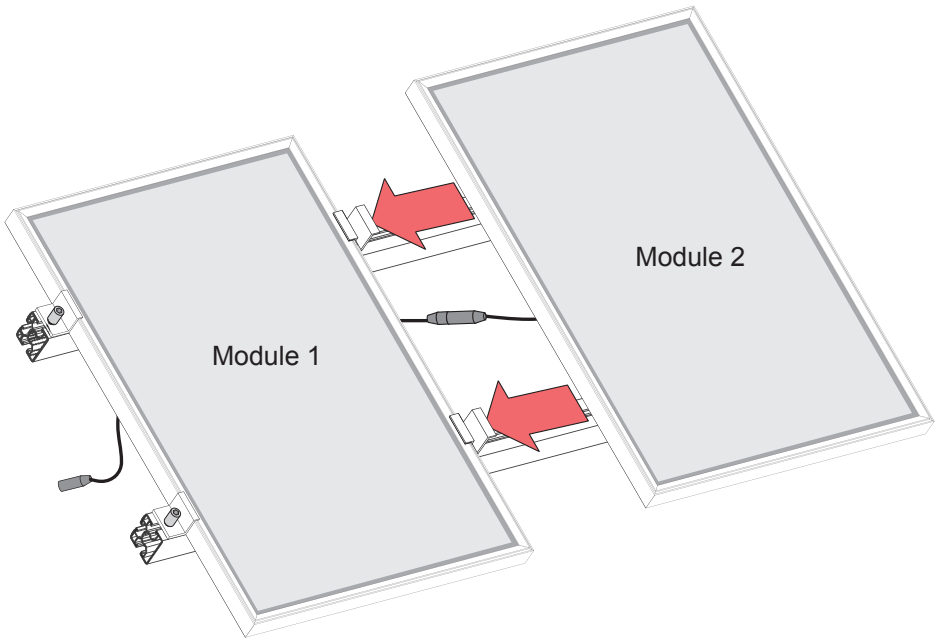
3 Connecting the module cables



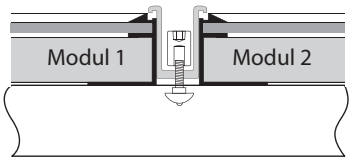
Before the second module can be pushed under the intermediate retaining clamps, the cable plug connections must be connected together correctly.

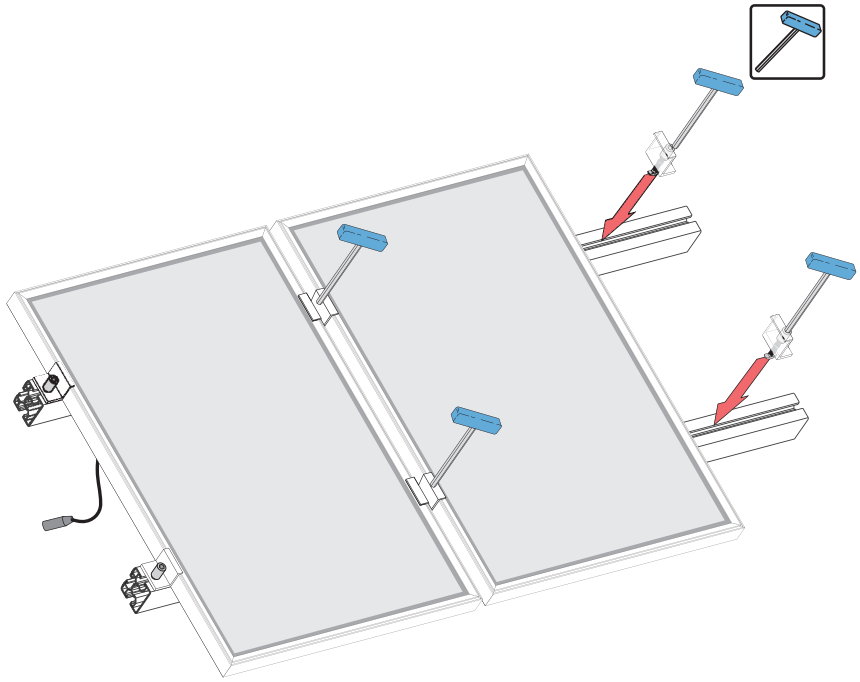


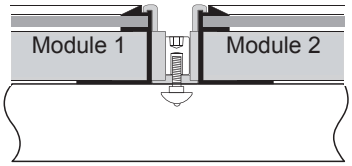
Connecting the module cables



Slide the second module in flush underneath the OneTurn.



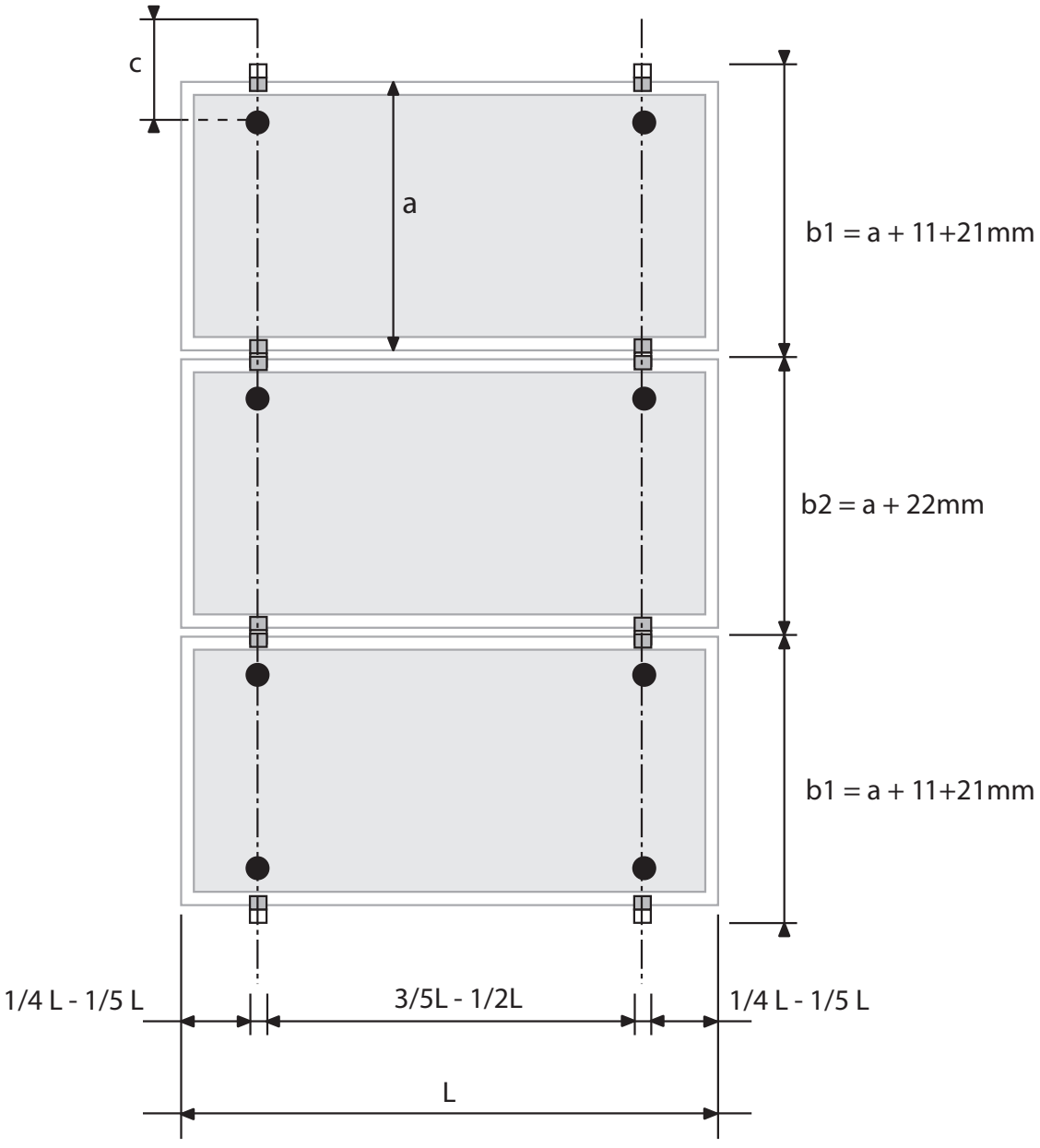




Module installation - type 2

● = Fixing point

The following applies to end retaining clamps: b1 = a+11+22 mm
The following applies to intermediate retaining clamps: b2 = a+21 mm



L = module length in metres
a = module width (m)
b = module spacing (mm)

c = maximum cantilever
c ≤ 0.15 * X when X ≤ 1000 mm
c ≤ 0.25 * X when X ≤ 2000 mm
c ≤ 500 mm when X > 2000 mm

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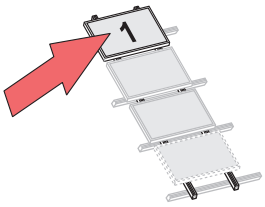
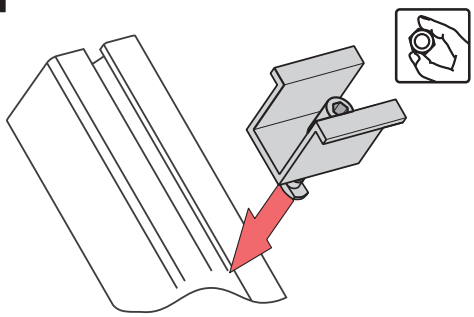
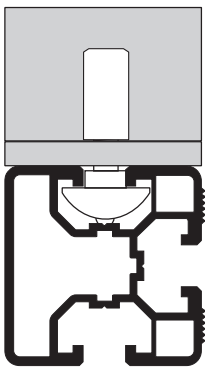
Installing the retaining clamps



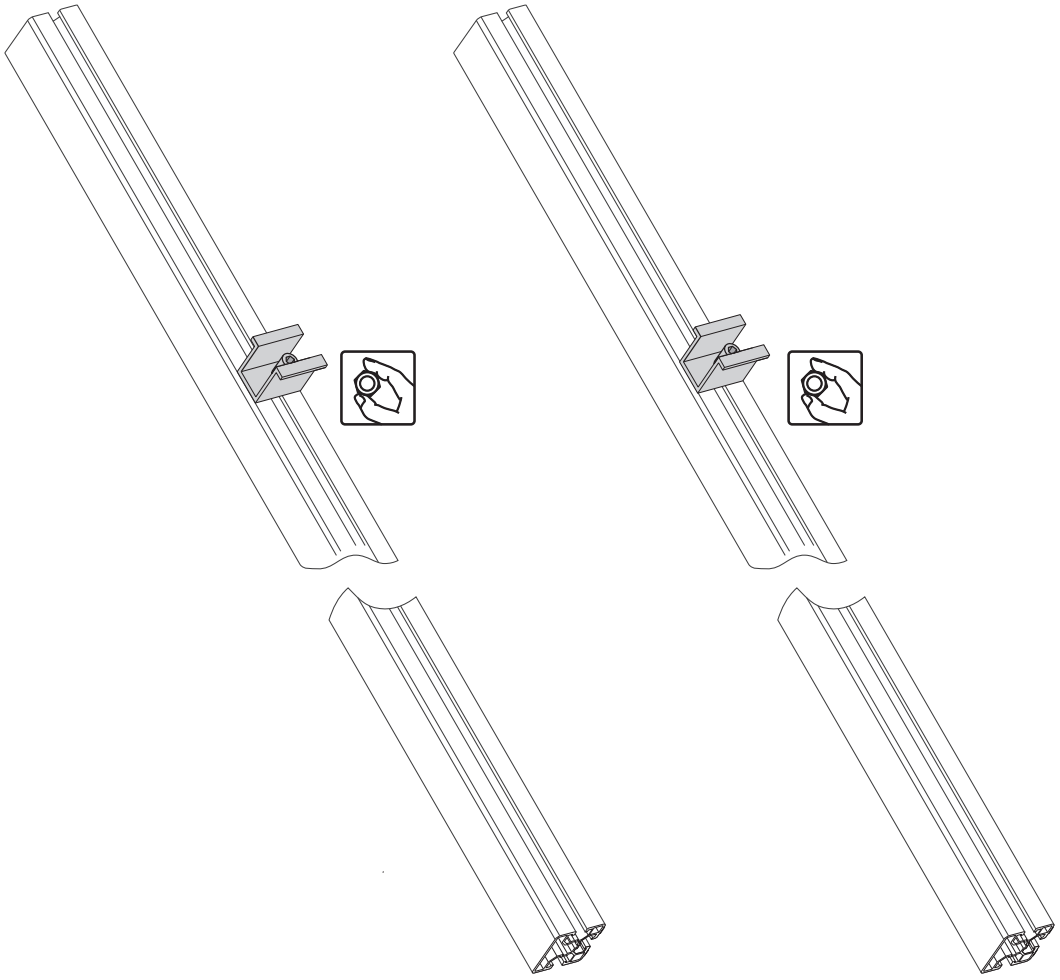
1



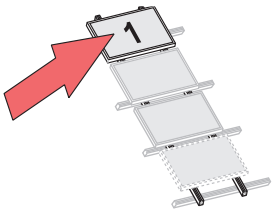


Locate the OneTurn by turning it 90° clockwise. The OneTurn screw head must be anchored at right angles to the mounting rail groove. After aligning the retaining clamps, tighten the threaded sleeves.

2

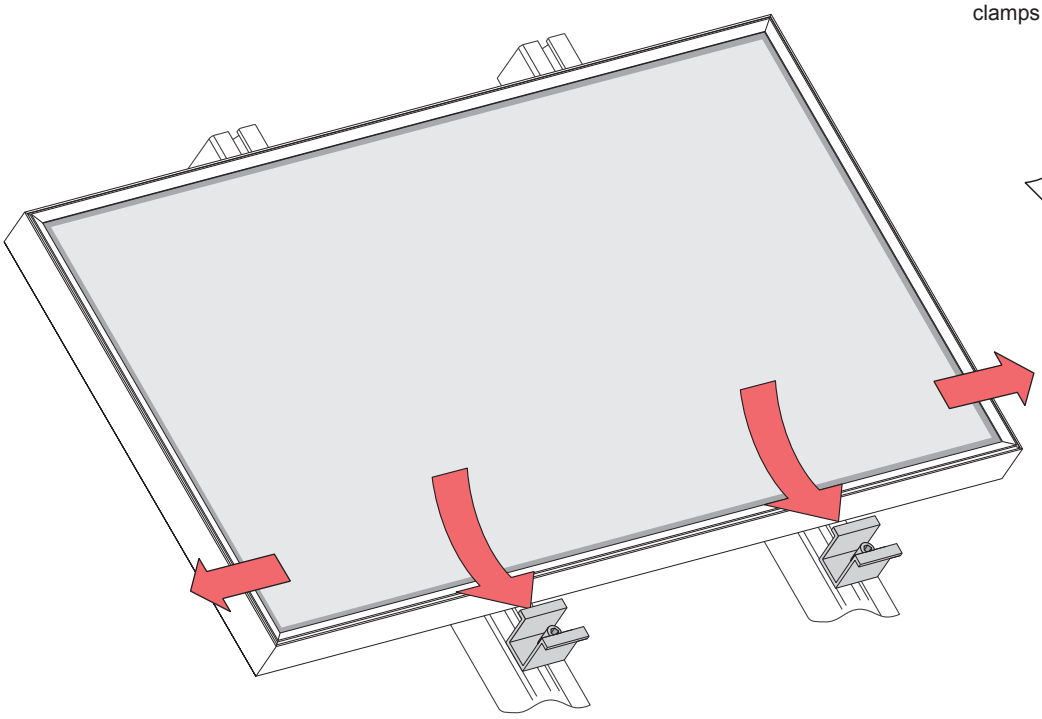


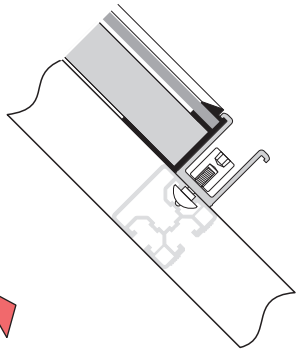
Positioning the modules



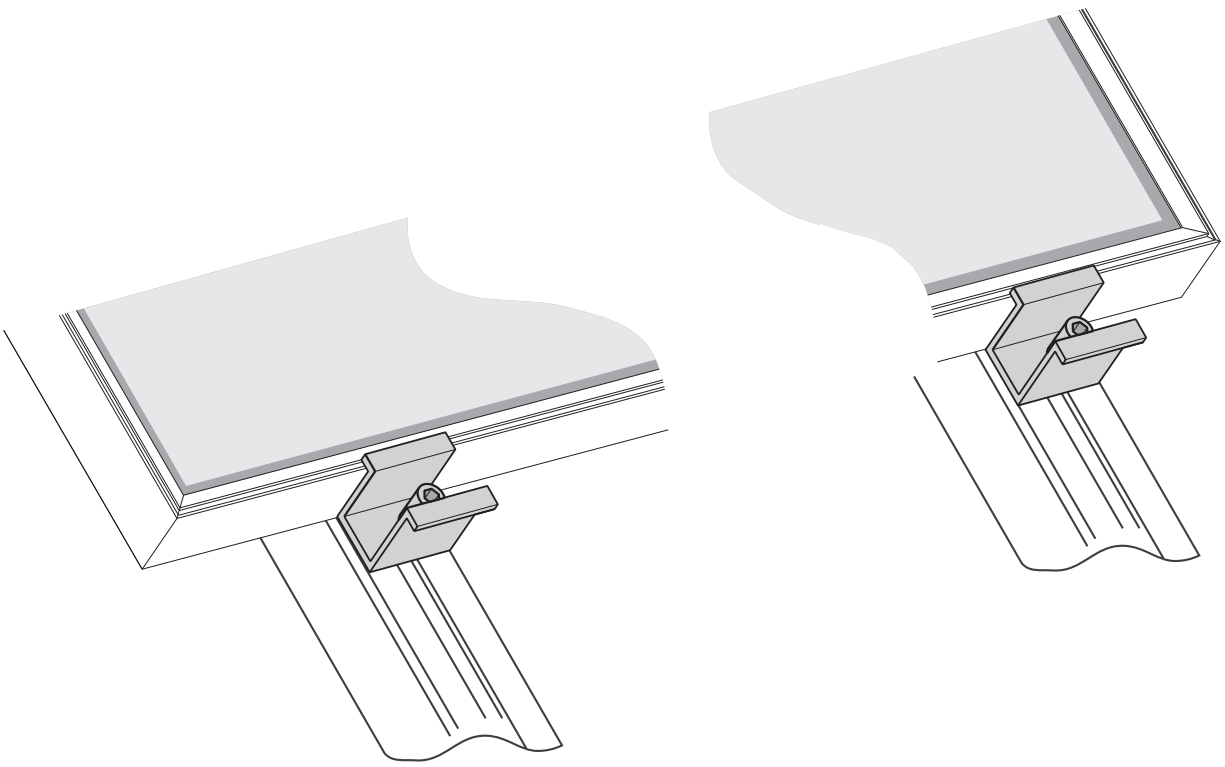
1

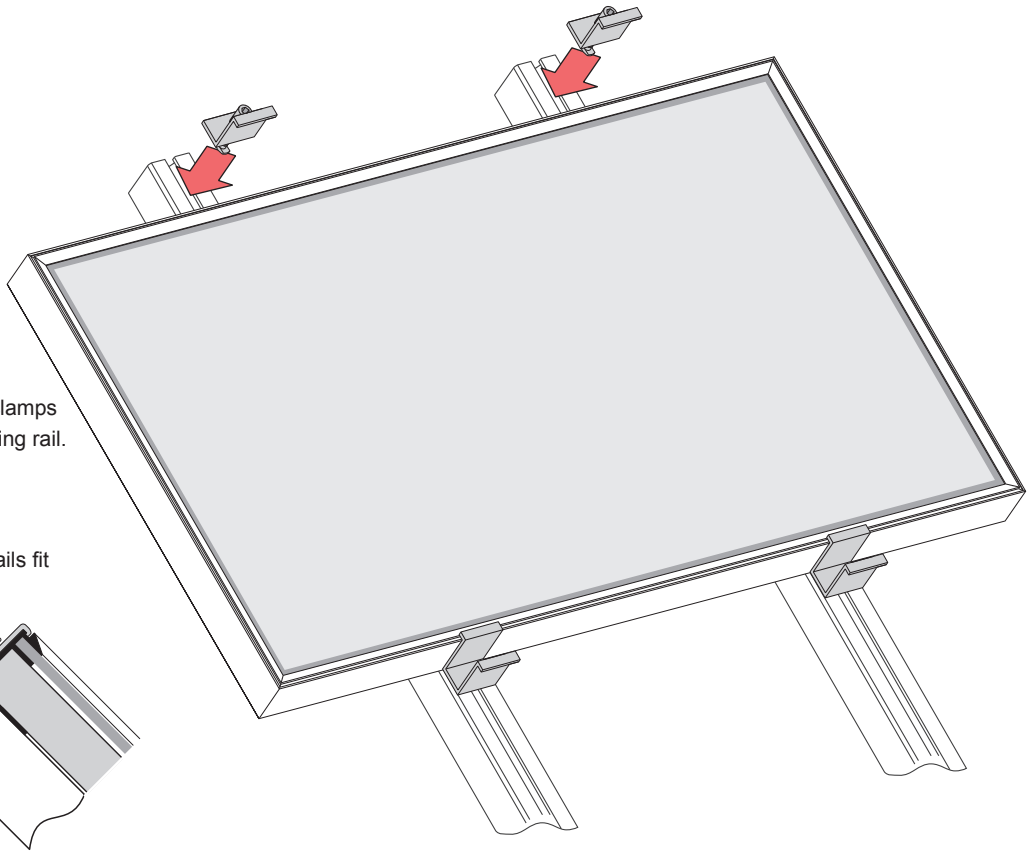
Position the intermediate retaining clamps flush with the module frame.





2



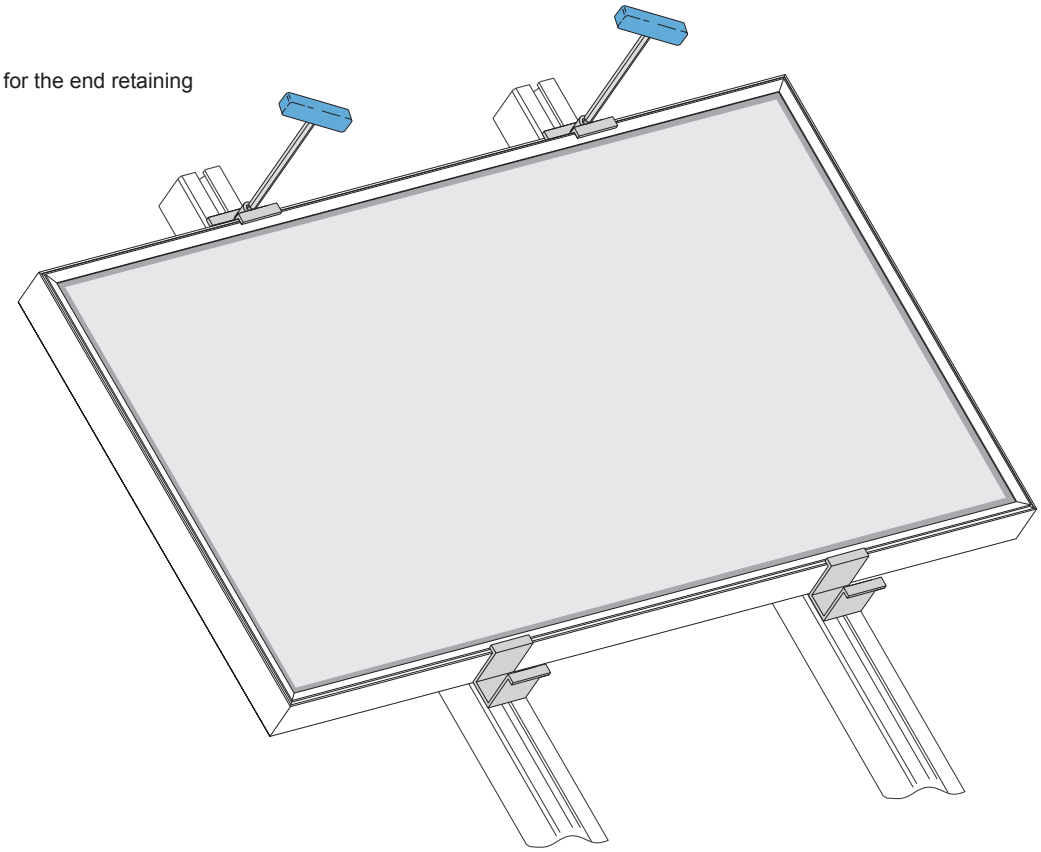


Position the end retaining clamps at the top end of the mounting rail.

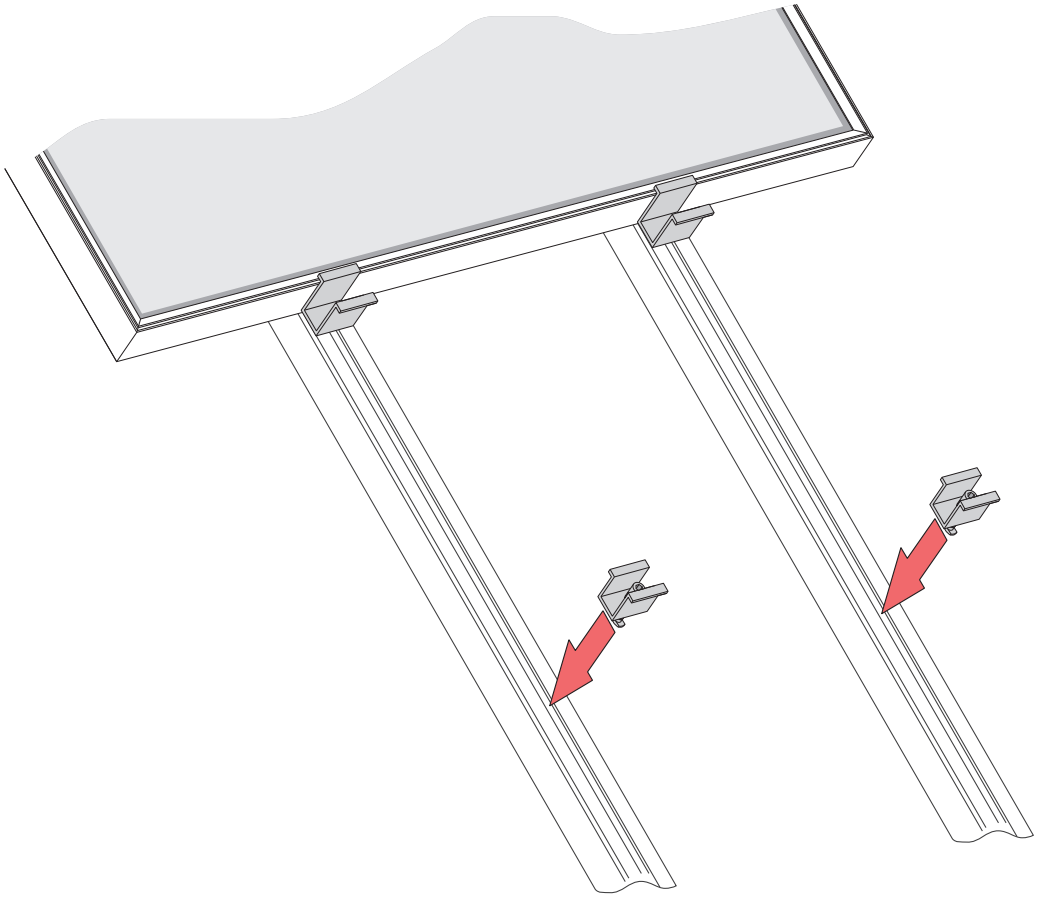
Ensure that the mounting rails fit flush.

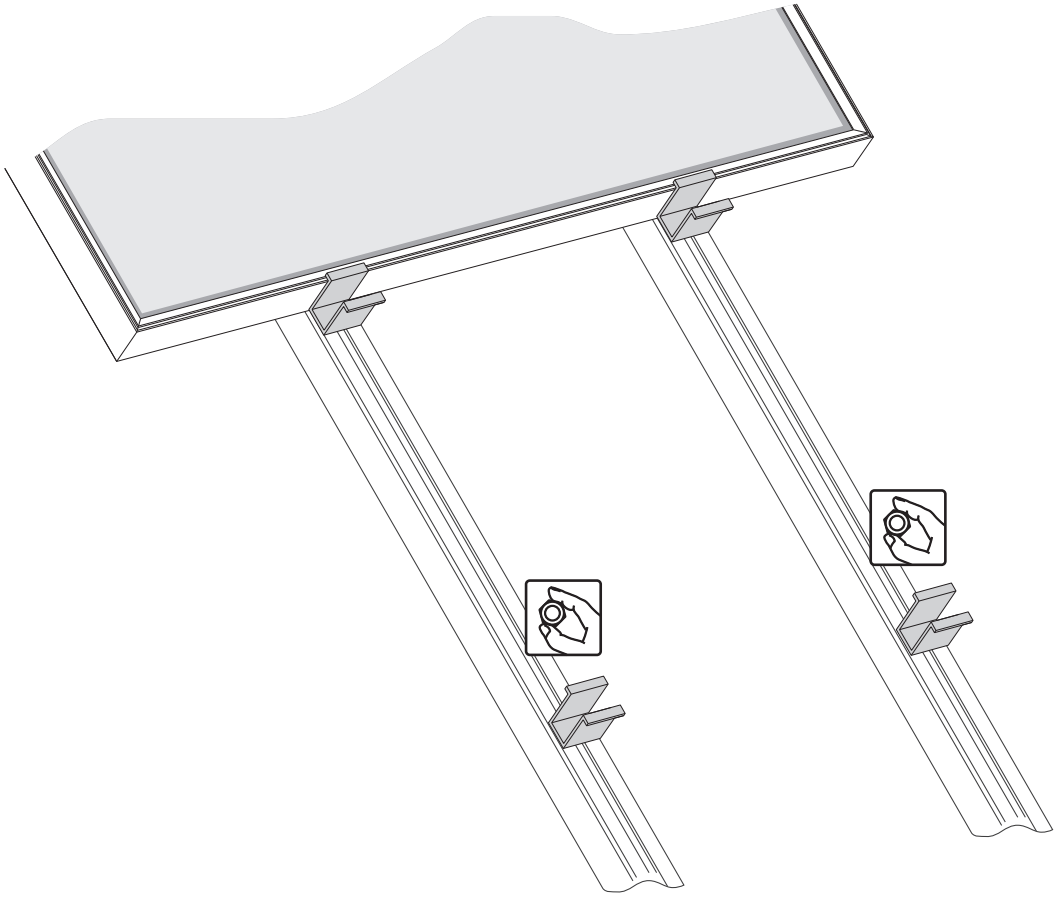
3

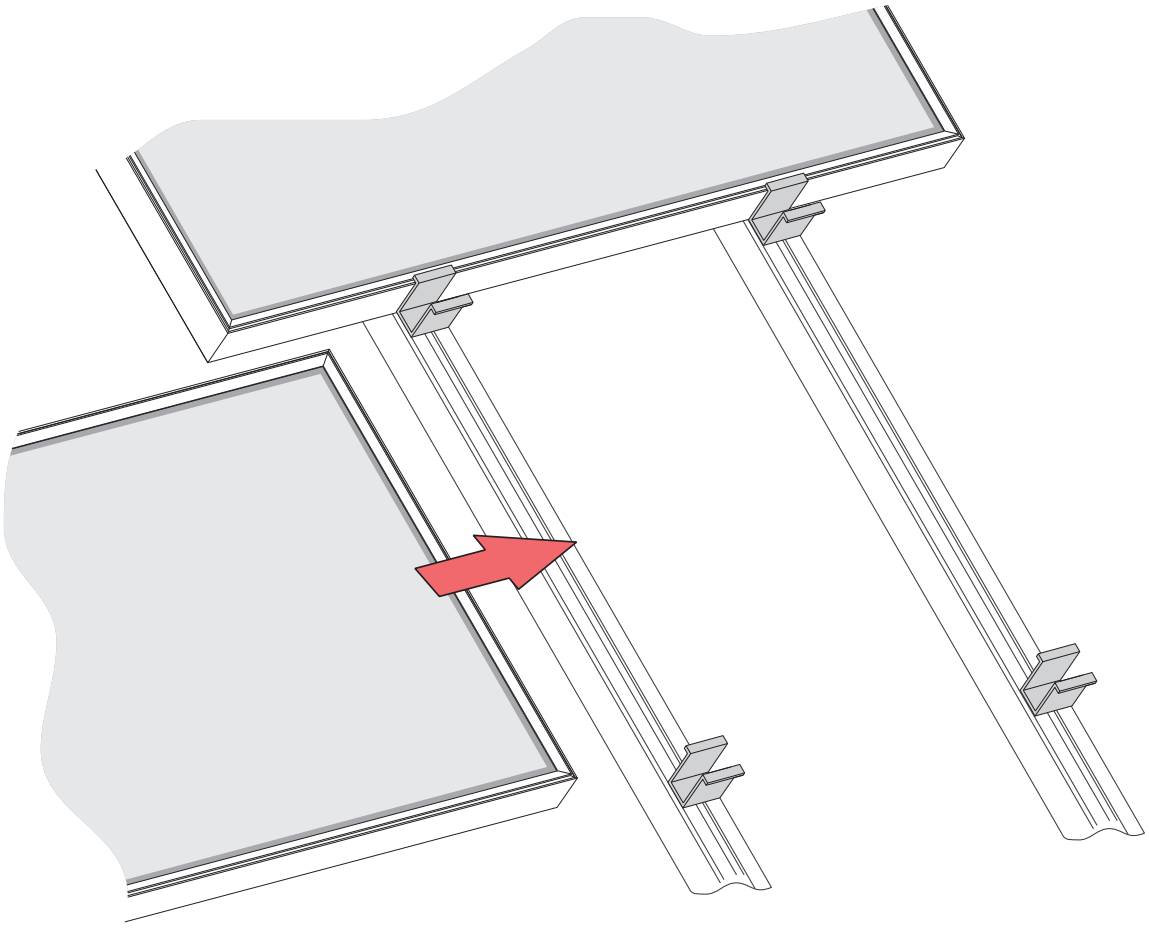
Then tighten the OneTurn for the end retaining clamps.

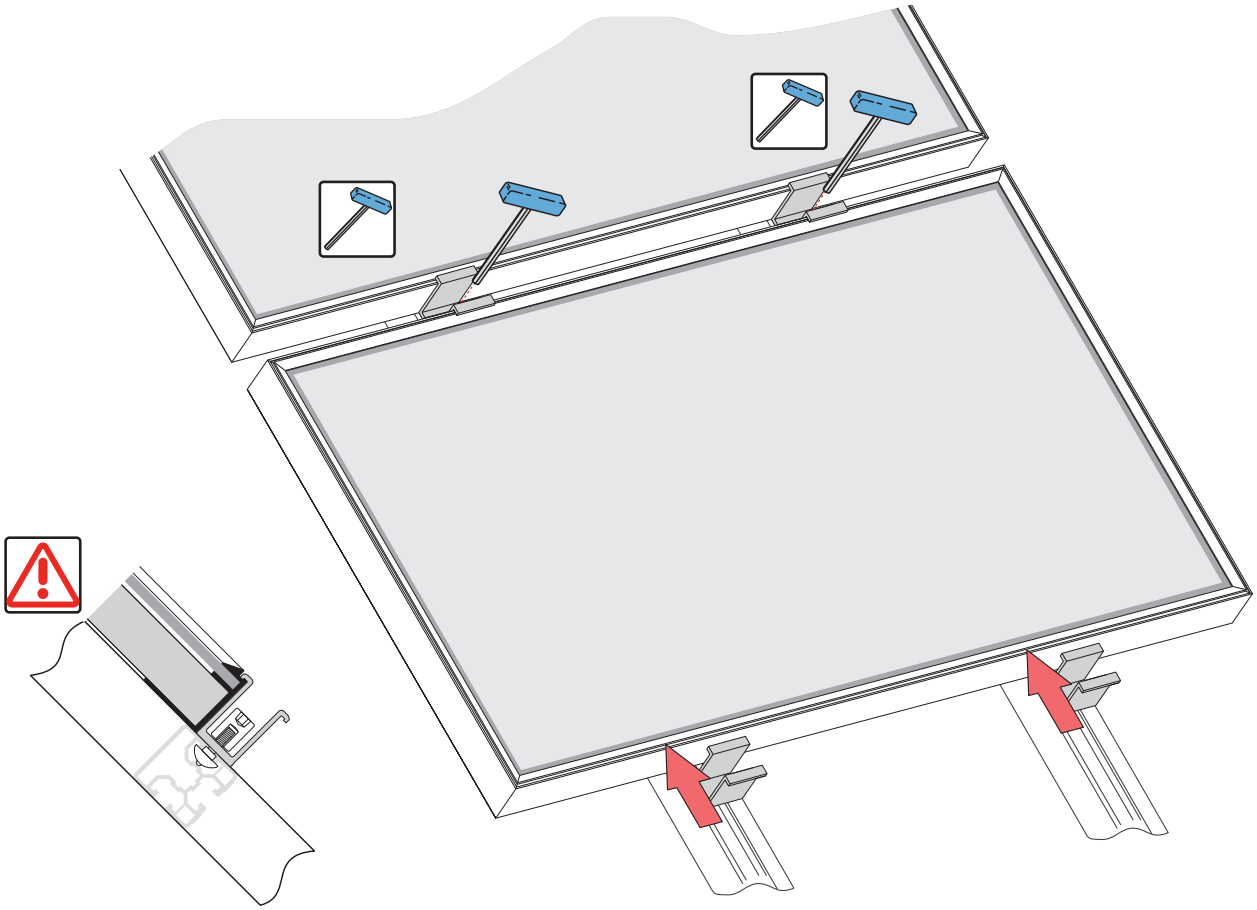


4

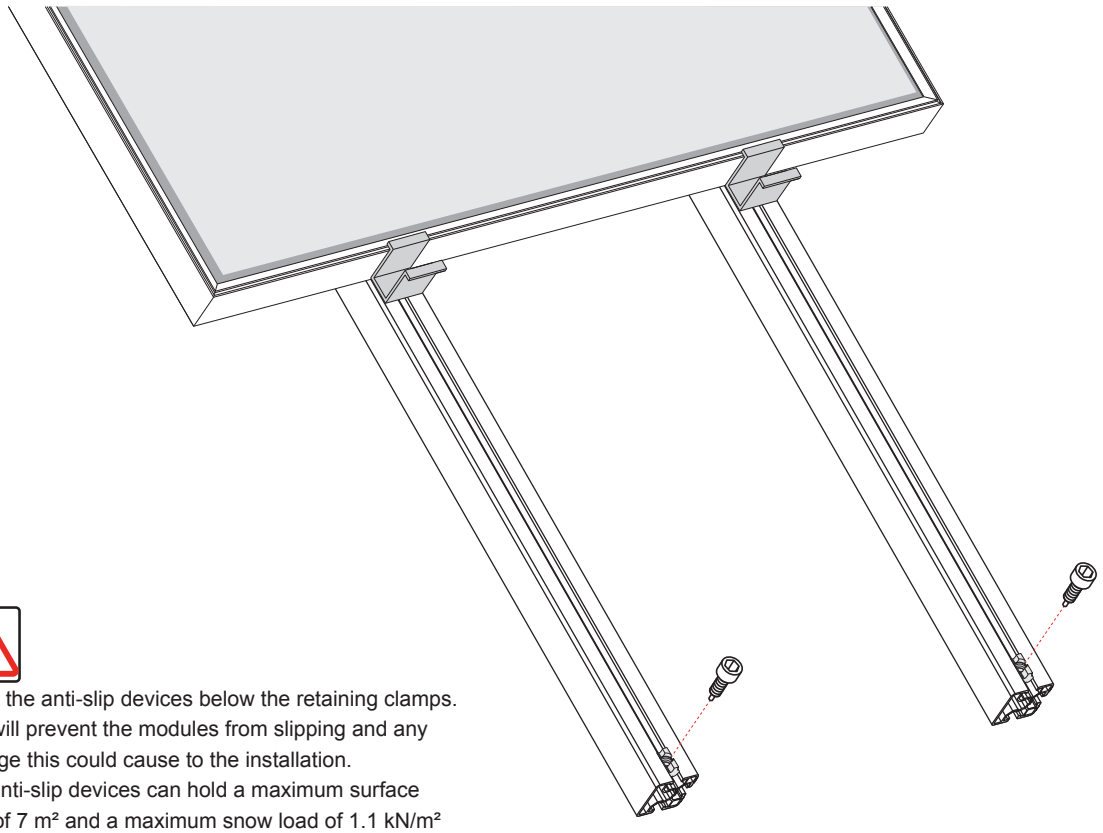




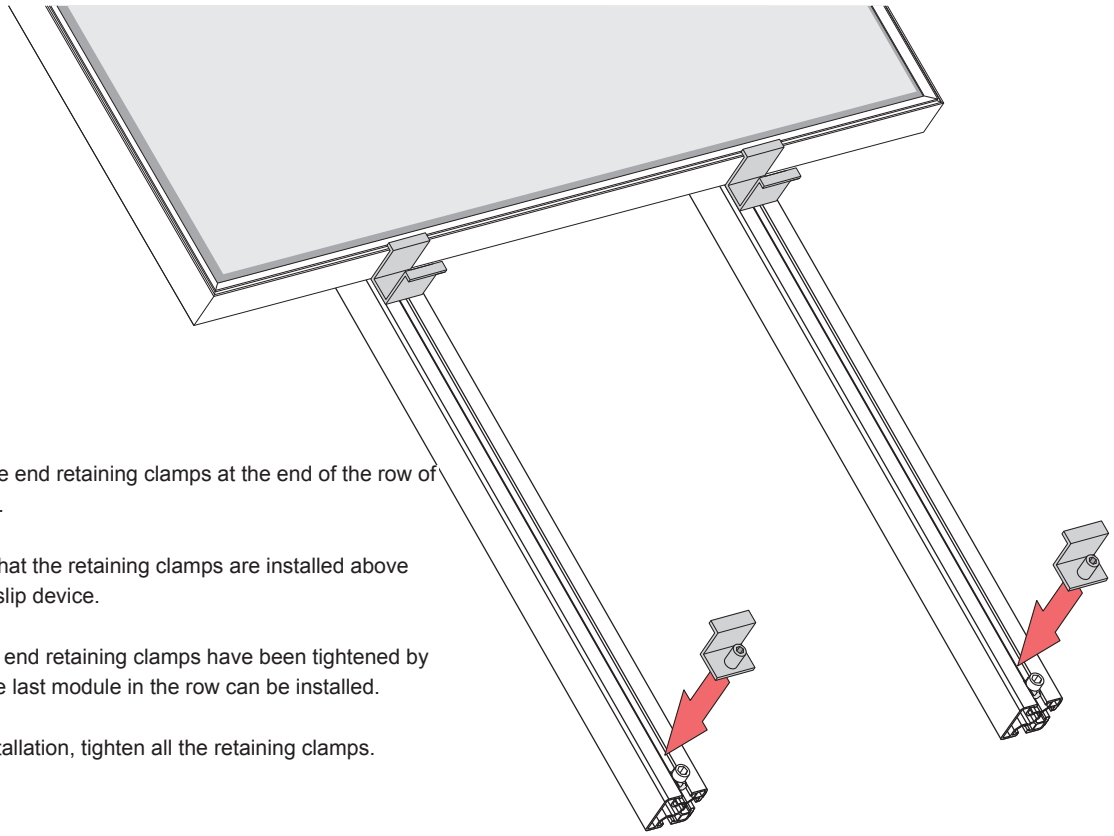




Installing the anti-slip device



Install the anti-slip devices below the retaining clamps. This will prevent the modules from slipping and any damage this could cause to the installation.
Two anti-slip devices can hold a maximum surface area of 7 m² and a maximum snow load of 1.1 kN/m² (one anti-slip device can withstand a max. load of 2.5 kN parallel to the roof).



Install the end retaining clamps at the end of the row of modules.

Ensure that the retaining clamps are installed above the anti-slip device.

After the end retaining clamps have been tightened by hand, the last module in the row can be installed.

After installation, tighten all the retaining clamps.

Electrical connection

Lightning protection

As a rule, no additional lightning conductor is required for photovoltaic installations, as the danger to the building is not increased.

If there is already a lightning conductor present, you must connect this into the photovoltaic installation.

Handover to the operator

You must instruct the operator in how to operate and use the photovoltaic system.

- Give the operator all relevant instructions and documents for safekeeping.
- Make the operator aware that the instructions must be kept in a safe place so that they are always readily available.
- Go through the operating instructions with the operator and answer any questions.
- Point out to the operator the safety instructions, to which he or she must pay particular attention.
- Make the operator aware that regular inspection/maintenance of the system is required and recommend an inspection and maintenance agreement.

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