



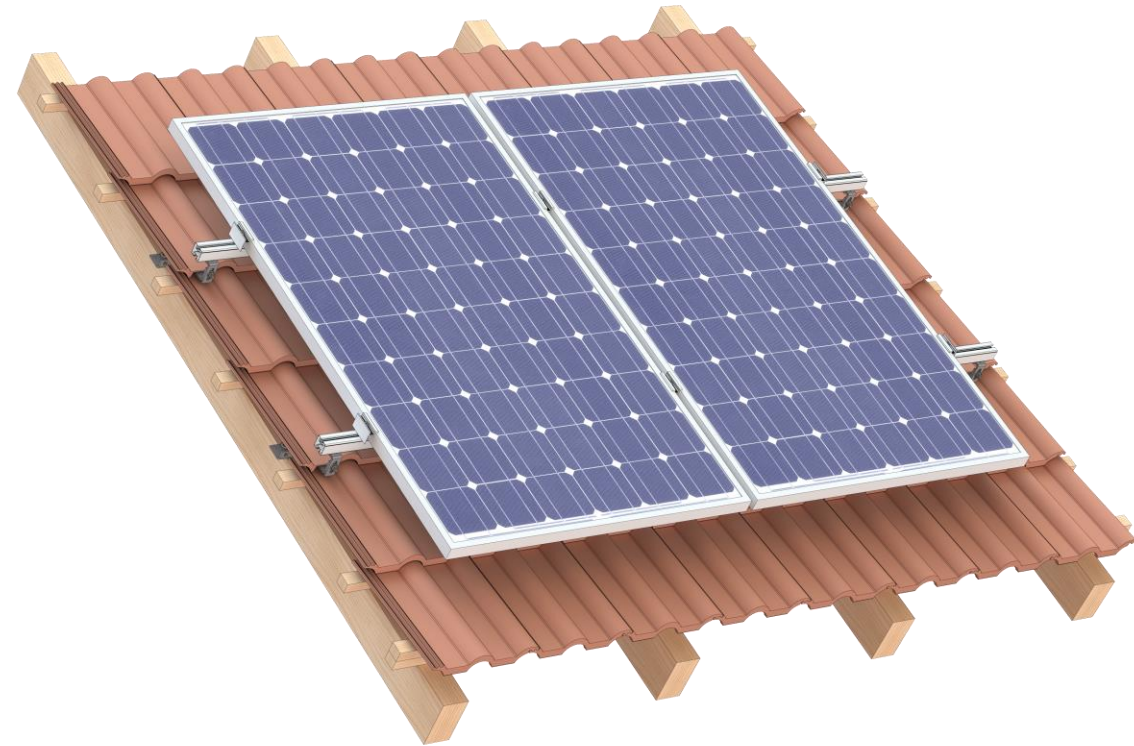
The following installation instructions describe **the installation of PROFINESS mounting systems for pitched roofs with roof tiles.**

Please read the installation instructions carefully before installation. Always check whether a later version of these installation instructions is available online (www.profiness.de - Downloads). If you have received a project plan including project statics for your project, these installation instructions are mandatory.

Comprehensive knowledge is required for the installation of PROFINESS mounting systems on roofs with tile cladding. We recommend having the fastening carried out or supervised by a trained roofer or similarly qualified person.

You can mount PV modules with the PROFINESS systems on the above-mentioned roof coverings both vertically and horizontally. The various components of the systems are made of aluminium and stainless steel. This ensures high corrosion resistance and the longest possible durability.

The components can also be almost completely reused.



Component	Product description
Mounting rail	Aluminium mounting rail with M8 (top) and M10 (bottom) connection or side connection for cross composite mounting with angle bracket.
Roof hooks	PROFINESS offers different variants of roof hooks. Their quantity and positioning depends on the individual planning.
Plate head screw	Usually, two plate head screws are required to fasten the roof hook to the rafter. The length of the plate head screws depends, among other things, on the possible over-rafter insulation.
Hexagon head screw / hammer head screw	Hexagon head or hammer-head screws are used to connect the mounting rail to the roof hook via the lower channel (M10).
Hexagon nut	Hexagon nuts with locking teeth hold the respective screw when connecting the roof hooks to the mounting rail.
End clamp (KlickFix quick-fit clamp if required)	End clamps can be pre-assembled as KlickFix quick-fit clamps or used individually with sliding block and Allen screw and are attached as end clamps of a module row.
Centre clamp (KlickFix quick-fit clamp if required)	Centre clamps can be pre-assembled as KlickFix quick-fit clamps or used individually with sliding block and Allen screw and are used to fasten and connect two modules in a module row.



Component	Product description
Cylinder/bushing screws	Used to screw the clamps into the slot nut of the upper rail channel (M8).
T-slot nuts	Can be swivelled into the M8 rail channel at any point and hold the Allen screw that is used to fasten the clamps.
Washer	Serve as a distance equaliser between the Allen screw and module clamp. Depending on the module frame thickness, the lock washer optimises the screw length.
End cap	Close the rail channel at the end of a row of rails.
Cable clips	Could be mounted in the rail channel or on the module frame to ensure easy cable routing.
Earthing clamp	Enable equipotential bonding of rails or modules with an earthing cable or aluminium round wire connection



PROFINESS Roof for tiled roofs: Installation of roof hooks on tiled roofs

The roof hooks must be positioned according to the local and static conditions and the installation situation.

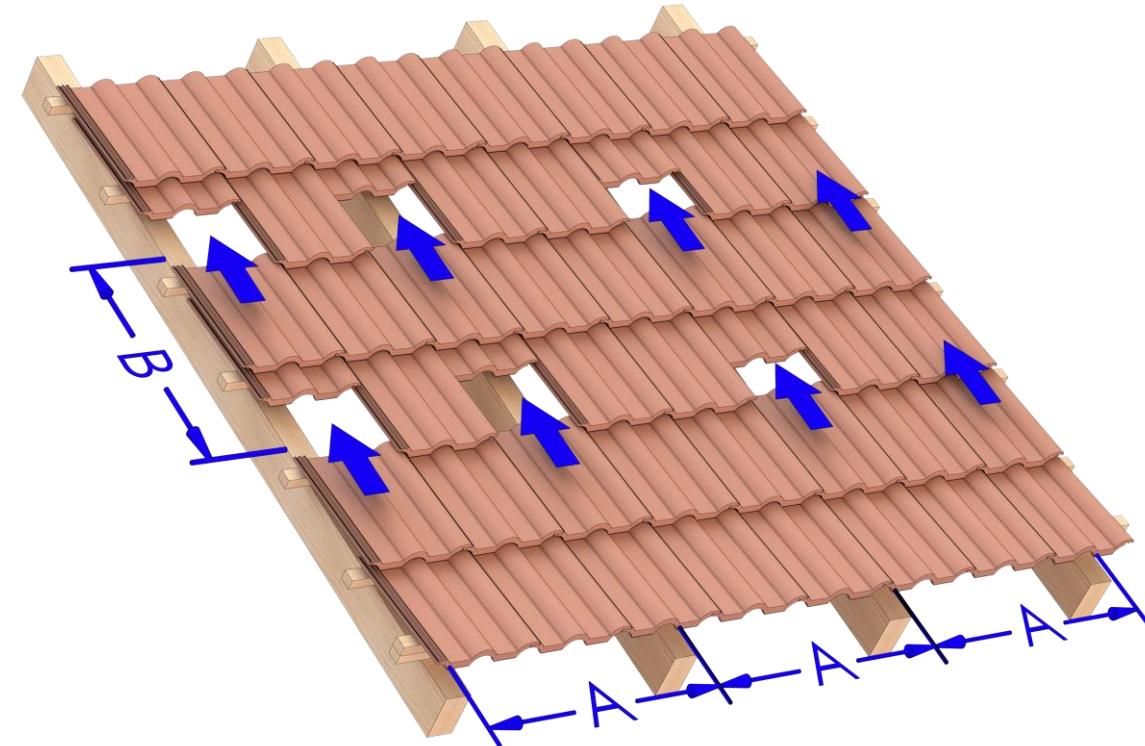
It is helpful if you mark the course of the rafters, the course of the individual module rows and the outline of the entire module field with chalk on the tiles before installation. In any case, mark the position of the roof hooks according to the installation plan.

The position of the module carriers/mounting rails must correspond to the clamping area specified by the module manufacturer.

Remove the roof tiles at the previously marked positions (if possible, just lift up the roof tiles).

Step by step

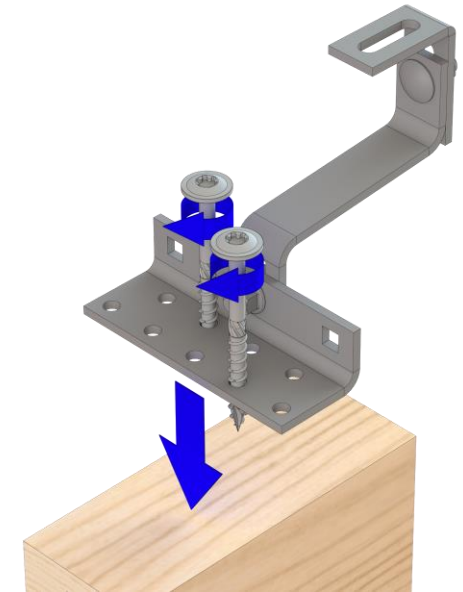
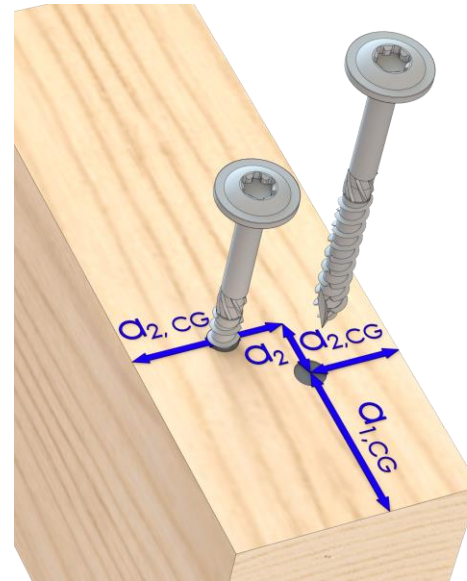
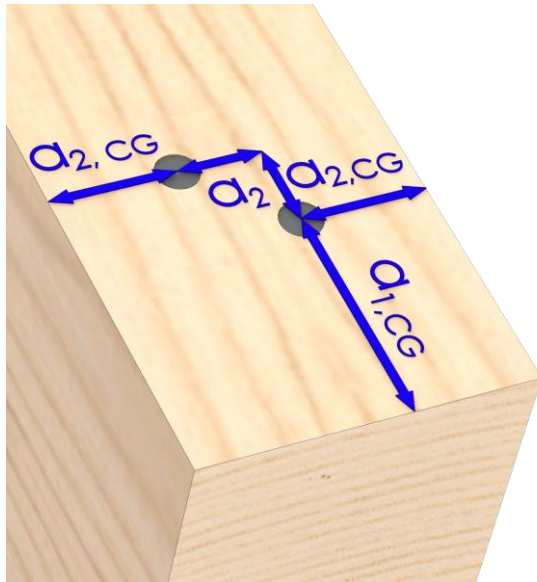
- 1) Check the planning documents.
- 2) Remove the roof tiles at the previously marked positions (if necessary, only push up the roof tiles).
- 3) Ensure that the roof hooks are positioned in accordance with local and structural requirements.
- 4) Mark and position the roof hooks (use a guide line). The bracket is guided through the pan valley and screwed to the rafter with two pan head screws.



A = Rafter distance

B = Distance between the mounting rails

The following regulations and minimum rafter dimensions apply for screwing the roof hooks to the rafters using disc head screws:



- **At least two pan head screws** with a diameter of $d = 8$ mm (standard) per roof hook.
- One screw in the bottom row of holes and one screw in the top row of holes (usually 10 - 15 mm offset from each other).
- **Edge distance: Screw to rafter edge (a_2) at least $4 \cdot d$** (e.g. $4 \cdot 8$ mm = 32 mm minimum edge distance).
 - ➡ Please contact us for narrower rafters - we offer special screws (e.g. 6 mm).
- The **screw-in depth** in the rafters should be 60-70 mm.

Always use at least two screws per roof hook for fastening to the substructure.

Depending on the diameter of the screw, the carrying timber component must not be pre-drilled (e.g. with 8 mm disc head screws if the wood type of the substructure is spruce, pine or fir).

If pre-drilling is required (for $\varnothing 8$ mm and different wood species of spruce, pine or fir), the recommended drill diameter for $\varnothing 8$ mm screw = 5 mm (hole diameter 4.95 to 5.05 mm),

for $\varnothing 6$ mm screw = 3.5 mm (hole diameter 3.45 to 3.55 mm). Select the drive for the screws for $\varnothing 6$ mm: TX25 and for $\varnothing 8$ mm: TX40. The plate head of the screw must lie flush and flat on the base plate of the roof hook

after screwing in. The screw must sit completely in the wood of the substructure, i.e. the screw tip must not protrude from the load-bearing solid wood. If a counter-batten (e.g. in the case of above-rafter insulation) is drilled through when screwing, it is advisable to pre-drill it, as the dimensions of the counter-batten may not be sufficient for the required minimum edge distances.

PROFINESS Roof for tiled roofs: screwing the roof hooks into the rafters

Longer plate head screws may be required for above-rafter insulation.

The length of the disc head screws required is determined by the distance from the mounting point, i.e. the base plate to the rafter + the screw-in depth in the rafter.

We recommend screwing in the wood thread completely (the thread is usually 7 cm long).

Plate head screws with double thread are particularly suitable for above-rafter insulation where the screw must hold the distance between the rafter and the counter-batten.

The over-rafter insulation is not compressed with disc head screws with double thread. This can be particularly important for soft materials used for over-rafter insulation.

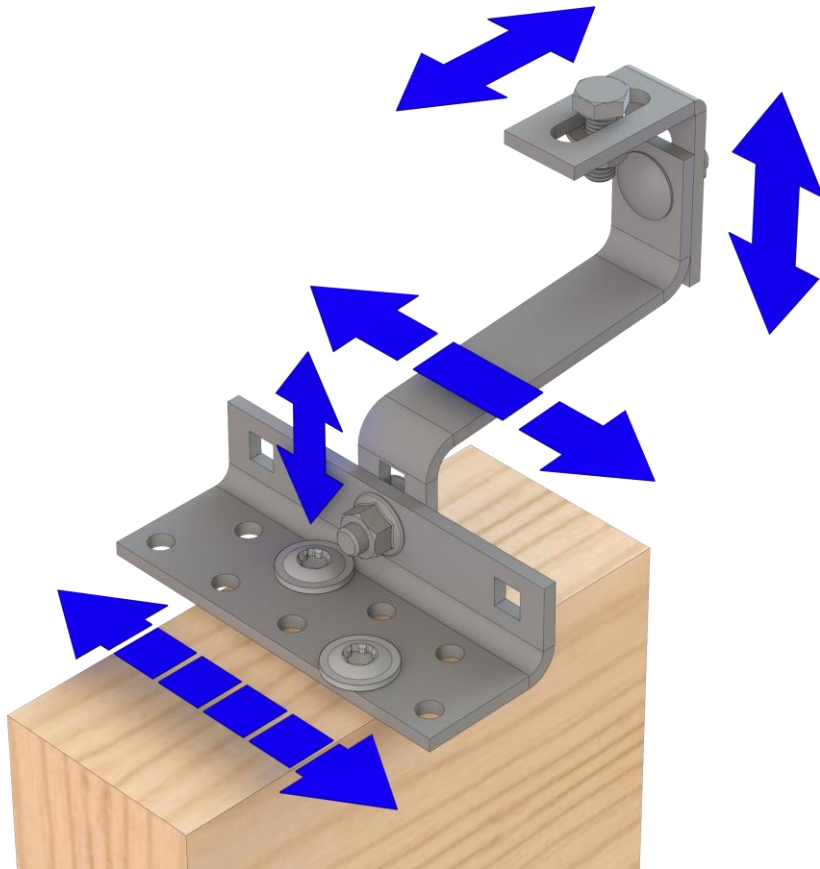


Installing a third weight relief screw

In addition to the roof hooks, it is important to fasten the counter battens to the roof with another screw, if this has not already been done on site, in order to absorb the downslope forces caused by the PV system.

The relief screw is positioned at a distance of at least 40 mm above the roof hooks and screwed at an angle of 60°. Our Connect Basic additional bracket (9529-6-30x3#T) can be used to simplify screwing at the correct angle and for additional connection to the roof hook.





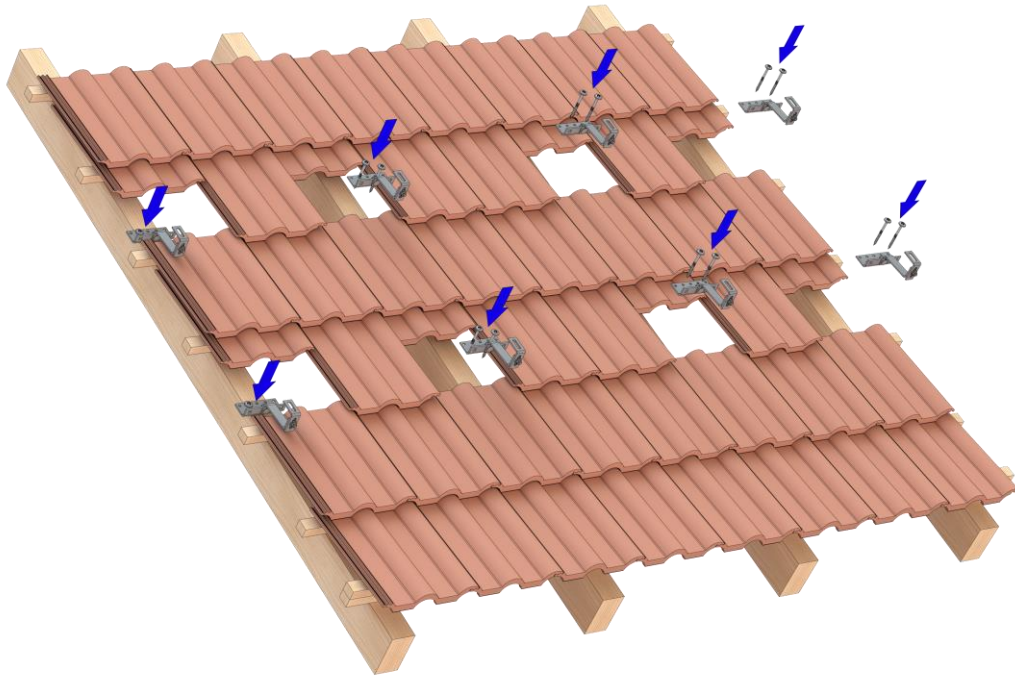
- The roof hooks must be positioned so that **the bracket comes out in the corrugated valley of the roof tile.**
- For this purpose, the base plate can be moved sideways and screwed **to the rafter at two points.** The base plate of the bracket can extend sideways above the rafter.
- With adjustable roof hooks, there are further adjustment options at several points on the bracket to achieve the optimum mounting height.
- In the roof batten/tile area, the roof hooks are either variably adjustable or we offer the standard rigid roof hooks in various bracket heights (35|40|45 mm - adjustable roof hooks up to 75 mm).
- If the adjustment options of the roof hooks are no longer enough, the roof hooks must be fully attached to the rafters or counter battens with a pressure-resistant underlay. We have suitable wooden plates in various thicknesses (3|5 mm) in our product range for this purpose. If higher distances need to be bridged due to thicker battens or roof tiles, a suitably thick batten must be sawn to the appropriate height on site and placed underneath (underlays should be pre-drilled to prevent splintering).

Roof hook underlay

A roof hook base must not be higher than the unthreaded part of the pan head screw, as this cannot transfer any forces to the substructure. If the shaft length is insufficient, a longer screw must be used.

We recommend screwing the wood screws into the rafters with the fully available thread at the end of the screw (usually 7 cm).

The roof hooks must now be positioned according to the local statics and the installation conditions. The PROFINESS planning documents are essential here.

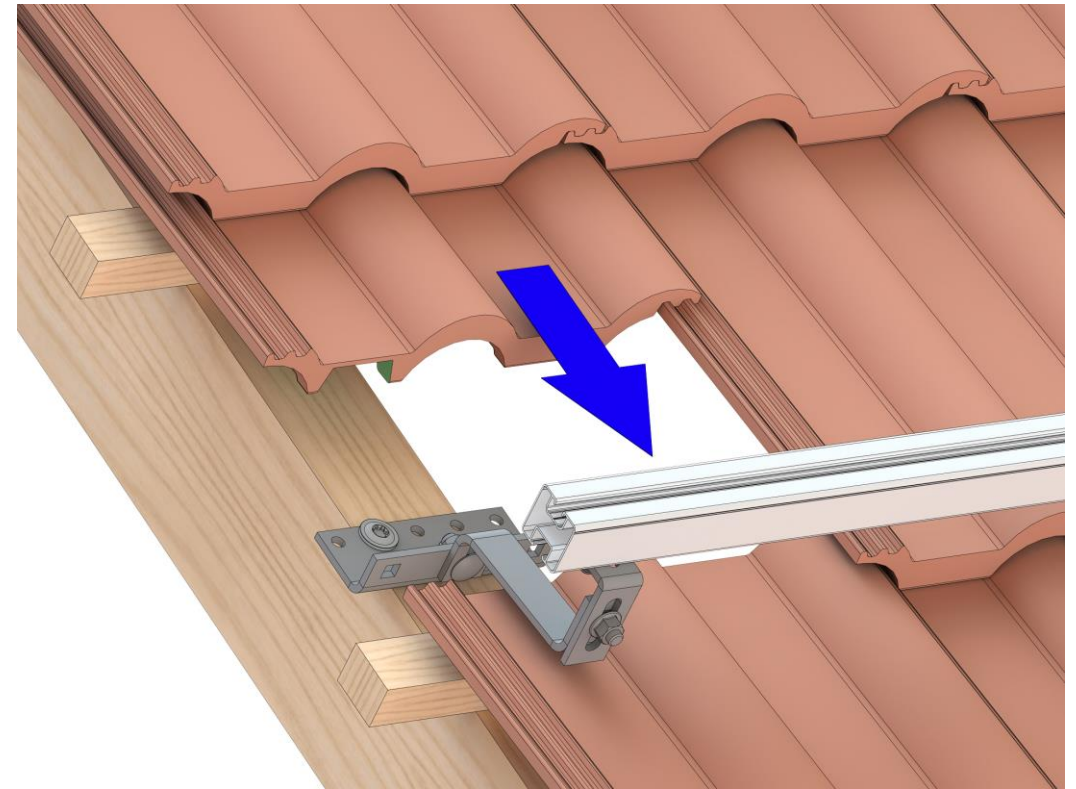
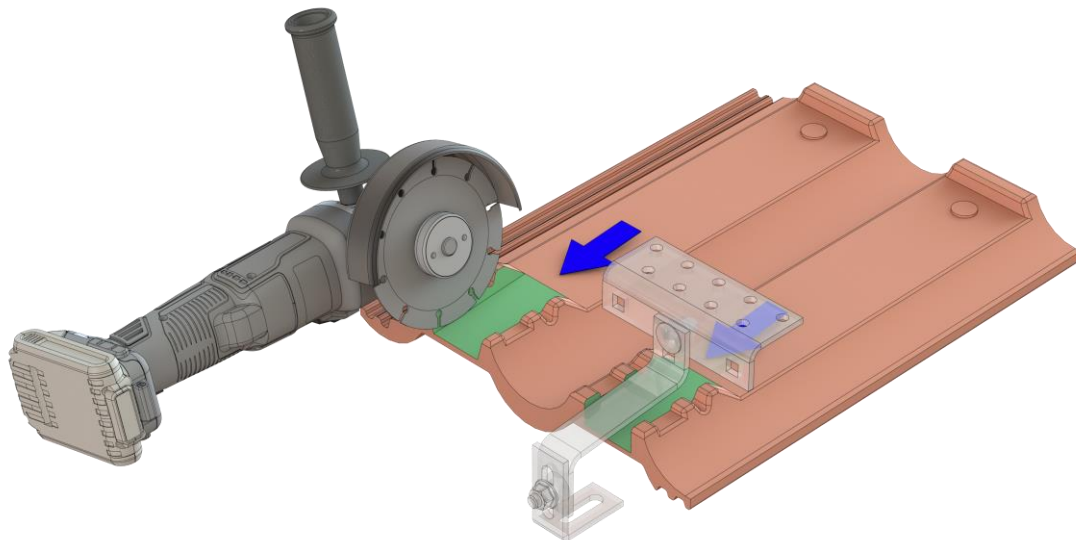


- **Leave a gap of approx. 5 mm between the bracket and the lower roof tile.**
- You can determine the appropriate bracket height by adding the thickness of the roof tile and any thickness of the carrying battens to the contact point of the base plate of the roof hook and adding an additional 5 mm securing distance so that the bracket does not rest on the roof tile.

- After installing the roof hook, the upper tile must lie flat again to ensure that the roof is watertight. For some roof tiles (e.g. Frankfurter tile / concrete tile), the upper tile must be machined on the back, e.g. with an angle grinder. We recommend installation with stainless steel roof hooks.
- Depending on the local conditions (e.g. with clay tiles), the lower tile may also need to be processed. The use of an aluminium roof hook is also possible here due to its thicker bracket.
- The safety gap between the lower tile and all remaining openings should be sealed using roofing materials (e.g. swelling tape).

- In areas with high snow loads, the lower tile can be replaced with a suitable metal plate (replacement tile).

The metal plates only provide additional safety and do not replace the structural design of the components appropriate to the location.



PROFINESS Roof for tiled roofs: Installation of a replacement rafter

If the installation of a roof hook on the rafter is not possible in accordance with the standard, e.g. because screw-in depths or edge distances are not observed, the installation of a rafter spanning profile between the rafters can be a solution, which then carries the roof hook.

Of course, the static conditions must also be sufficient here and the installation of the switch must be carried out in accordance with the applicable standards.

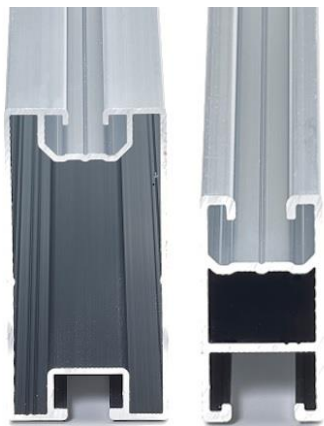
Another option is to use the PROFINESS Roof Performance base plate, a rafter spanning profile, cut to fit from rafter to rafter (only possible with PROFINESS Performance aluminium roof hooks).



In order to meet the static requirements of the respective location and to be able to plan and install the optimum substructure depending on the installation situation, PROFINESS offers aluminium module mounting rails of different thicknesses for your Roof tile roof system.

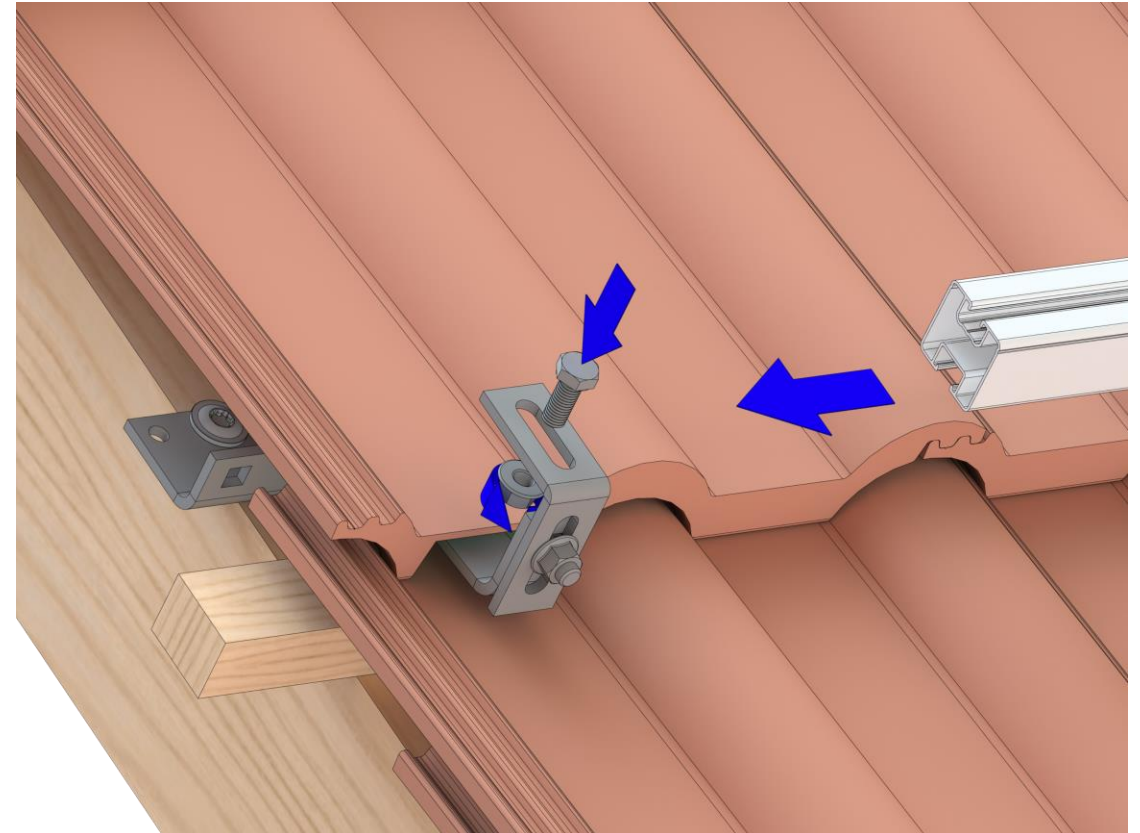


For the lower connection to the roof hook, the PROFINESS system profile has a rail channel at the bottom for an M10 screw connection. This fastening can be done either with PROFINESS hammer-head screws, which can be screwed in at any point on the profile, or with an M10 hexagon head screw (DIN 933), which is inserted into the side of the rail channel.



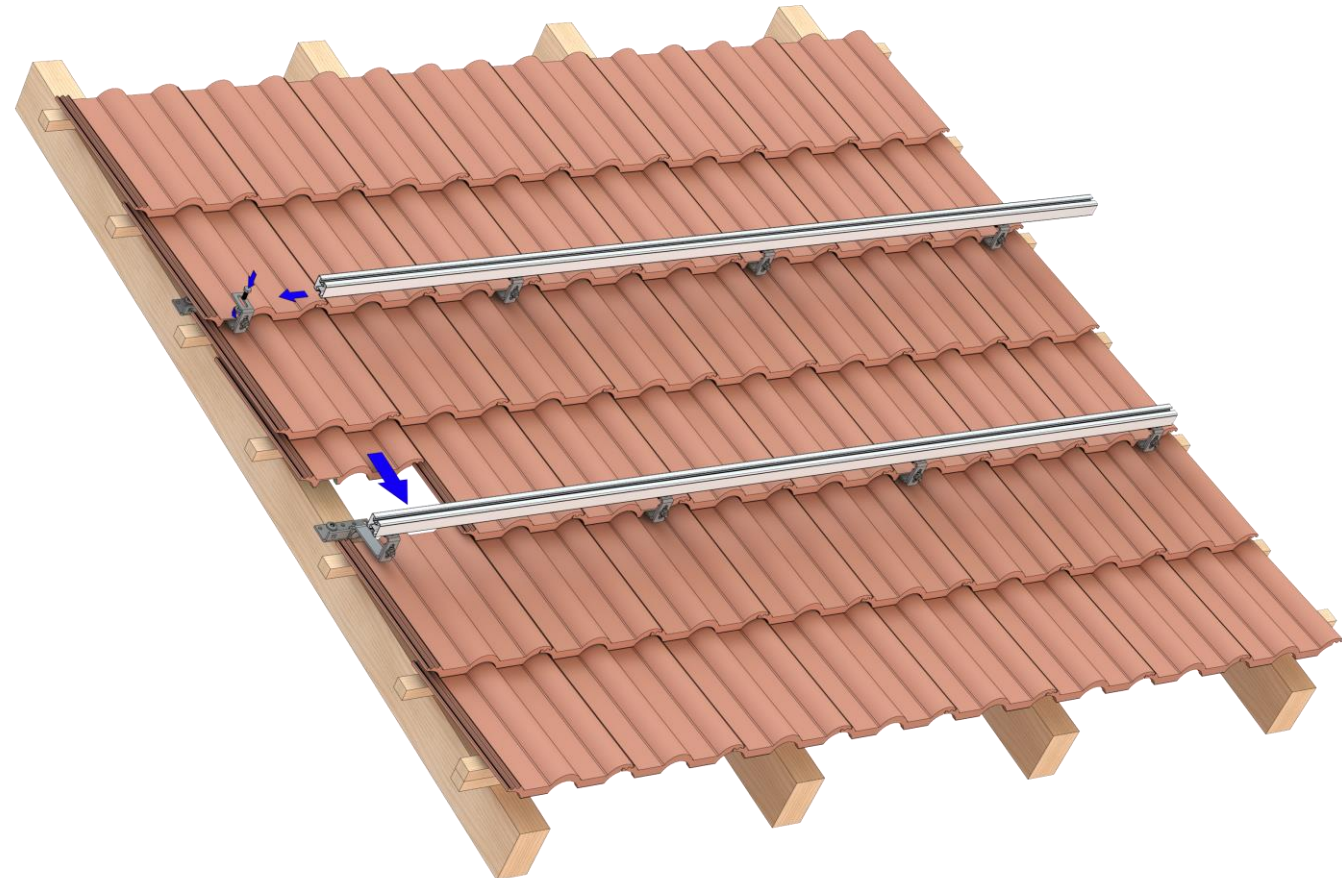
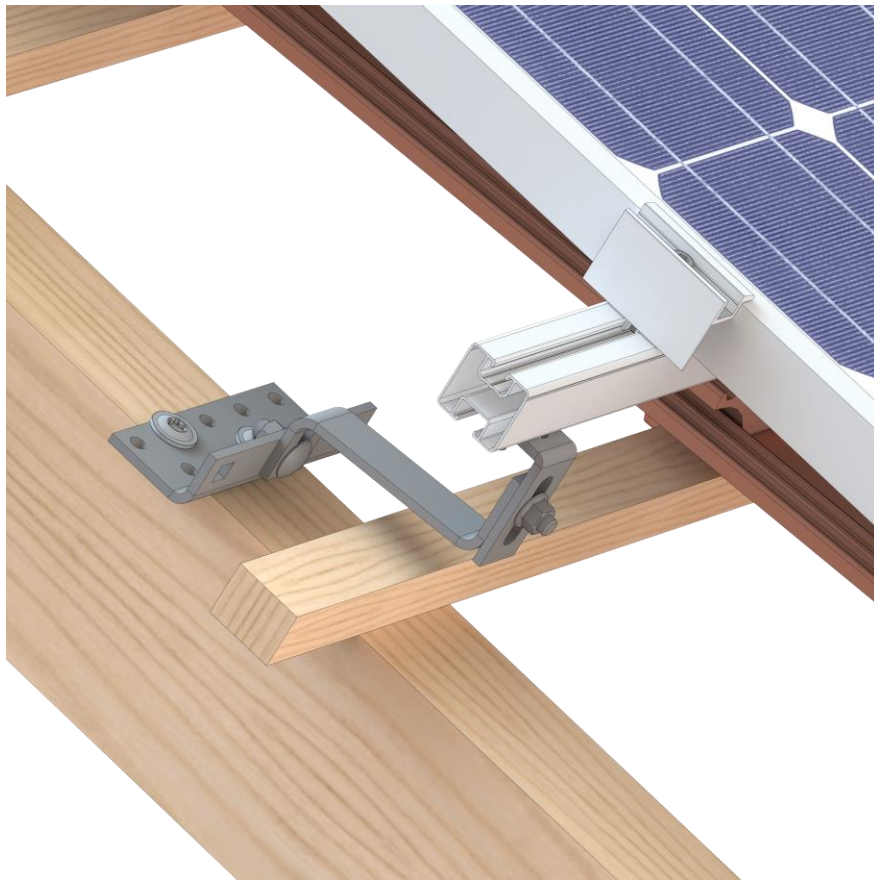
Single-layer installation with modules lying upright

- The module mounting rails (e.g. Performance Standard 40x40 profile) can be mounted horizontally and vertically on our roof hooks.
- Fasten the mounting rails to the roof hook using the lower M10 channel. To do this, use either the hexagon head screws previously inserted into the channel or hammer-head screws (can be screwed in at any point) including lock nuts.
- Check that the hammer-head bolt is correctly positioned in the groove channel and tighten the nut firmly (**tightening torque max. 25-30 Nm**). The mounting rails must be installed without tension. To do this, use the adjustment options of the adjustable roof hook or, in the case of rigid roof hooks, compensate for unevenness by placing spacer sleeves / washers between the profile and the roof hook. The screw may need to be longer depending on the need for a height adjustment.



The module mounting rails (e.g. Performance Standard 40x40 profile) can be mounted horizontally and vertically* on our roof hooks.

Ensure that the mounting rails are aligned evenly and parallel to the ridge and that the mounting rails are positioned in the clamping area of the modules.



*If the rails are mounted vertically, check whether the mounting rail is in the clamping area of the modules

If a module row is longer than the mounting rail, it can be extended using rail connectors.

When extending the Performance Standard mounting rail (40x40 mm), for example, two Connect Basic slide-in connectors are pushed halfway into the already installed mounting rail and tapped in lightly (e.g. with a rubber hammer). The connectors can be secured with additional self-tapping screws.

The module mounting rail is then pushed flush onto the profile connector. When the mounting rails are joined together using connectors, an electrically conductive connection is created (important when creating potential equalisation).



Alternatively, the rails can be connected using four-hole connectors and a quadruple screw connection with hexagon bolts and lock nuts.



U-connectors, which are also placed around the rails afterwards and fastened with four self-drilling screws, offer another connection option.



The following installation instructions must be observed for the different versions of rail connectors:

Connector type	
<p>Connect Basic slide-in connector</p>	<p>Two connectors are required per connection point. Both mounting rails are pushed together flush on the connector using pressure. This creates a conductive connection (if relevant for integration into the lightning or earthing concept, this should be checked professionally on site after installation).</p>
<p>Connect Basic U-connector</p>	<p>This U-connector can also be slid over the connection point at a later date. The connector is fixed in place with four 5.5x25 self-drilling screws. Suitable for our 40x40 profiles or 80x40 profiles.</p>
<p>Connect Basic 4-hole perforated plate connector</p>	<p>The 4-hole connector is fastened in the lower M10 profile channel using four screws (hexagon head screw or hammer-head screw) and nuts. Suitable for all mounting rails with an M10 channel at the bottom.</p>
<p>Connect Basic - further slide-in connectors</p>	<p>Slide-in connector for Strong mounting rail (80x40) or Performance mounting rail (40x20). One connector per connection point. The connector is fixed with four 5.5x25 or self-tapping screws.</p>



The connectors must be positioned so that they lie between two roof hooks.

No cantilevers (overhang beyond the last roof hook) may be created with connectors.

In addition, the connector offers the option of quickly and easily creating expansion joints according to the conditions of the roof. (The continuous rail must rest on at least two roof hooks again).



The graphic shows an example of the slide-in connectors including noses, which are hammered into the profile channel for a stable fit. Both mounting rails are pushed together flush on the connectors using pressure to create a positive fit.

PROFINESS Roof for tiled roofs: Installation of a cross bond

Double-layer installation for transverse framed photovoltaic modules

Install the vertical module supports on the lower, horizontal mounting profiles using cross connectors.

The clamping range of the modules (shown in the module manufacturer's product descriptions) determines the distance between the upper supports.

Always mount the vertical module supports from bottom to top. Check that the cross connector is correctly fitted and tighten the screw (**see following page for tightening torque**). The respective location and the installation situation determine the number of fixing points required in the cross connector. As a rule, each crossing point is fitted with a cross connector.

The vertical module mounting rails are connected/extended in the same way as the horizontal mounting profiles. The connection positions must be between two crossing points so that no cantilever is created after a connection point.





Quick and easy fastening of the PROFINESS **Connect X Z-bracket** (always mounted alternately above and below the horizontal profiles) and the standard Performance mounting rail and the reinforced Strong mounting rail (40x40 each).



Fastening with PROFINESS Connect X **cross connector plate** with Performance rails (40x40 mm, 20x40 mm and 80x40 mm) and bottom connection (M10) as well as Strong mounting rails. Plate with two slotted holes for M8 screw connection and one slotted hole for M10 screw connection. Allen screws (M8x16) and sliding blocks (M8) are also required.



Fastening with PROFINESS Connect X cross connector bracket and PROFINESS **Performance mounting rail (40x40 mm) on the side.**

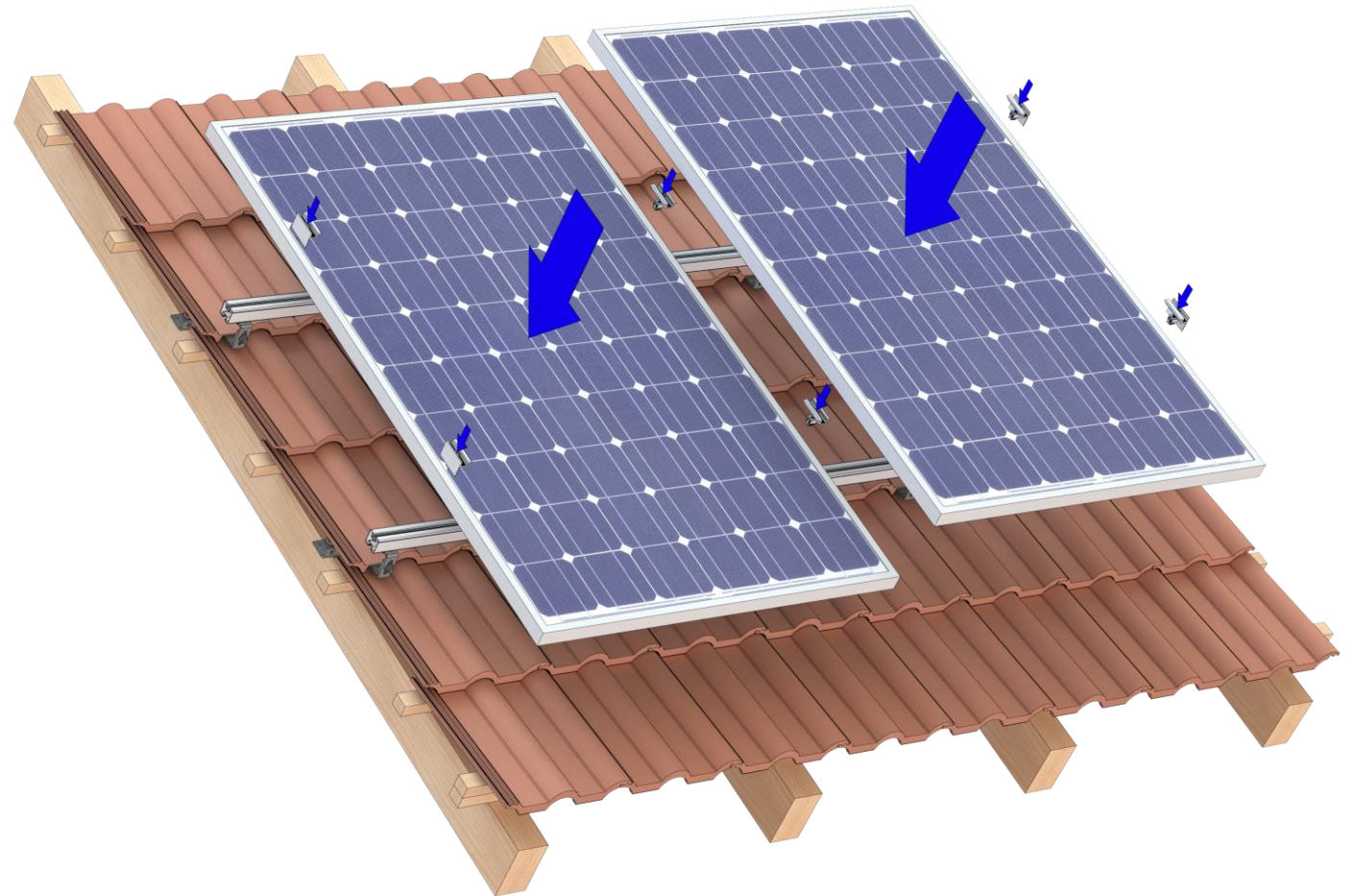
Additional Allen screws (M8x16) and sliding blocks (M8) are required.

As soon as the mounting rails are aligned and secured, the modules can be clamped onto them.

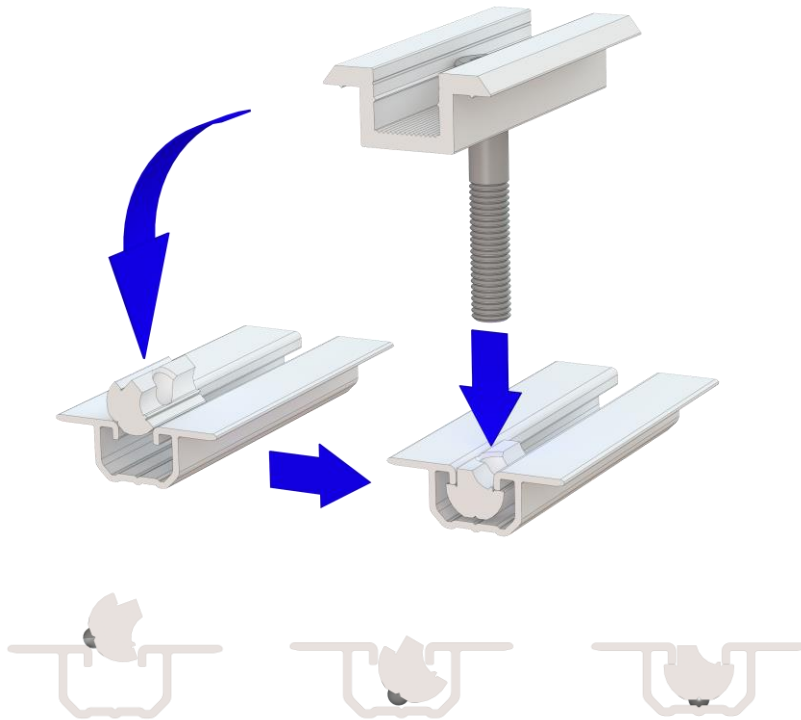
In the following, we first describe the installation of upright modules on the mounting rails.

First place the modules in the desired position.

The respective clamping of the modules can be found in the explanations on the following pages.

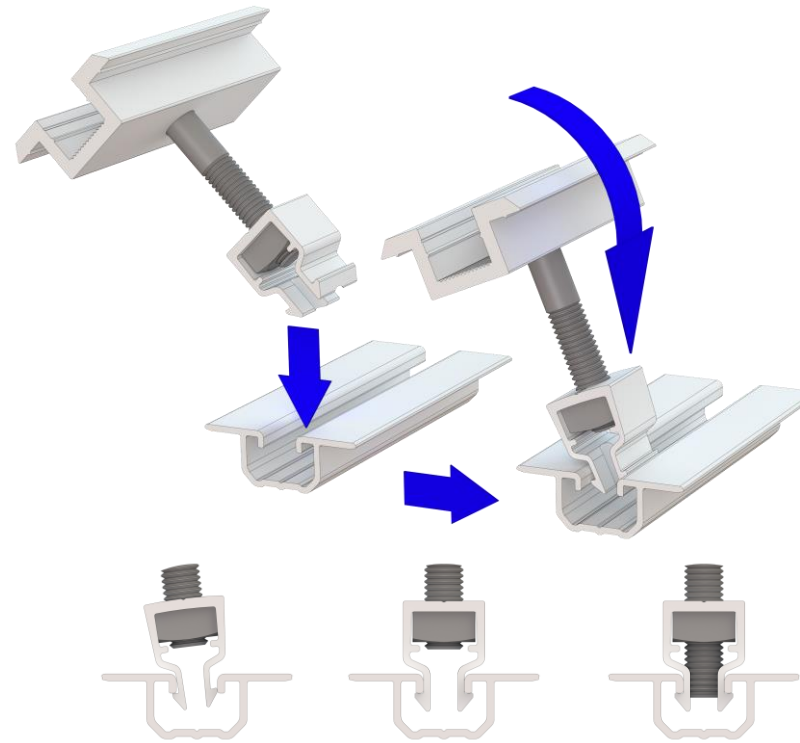


PROFINESS Connect Basic module clamps

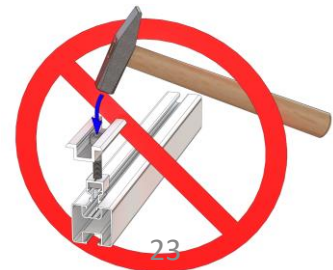


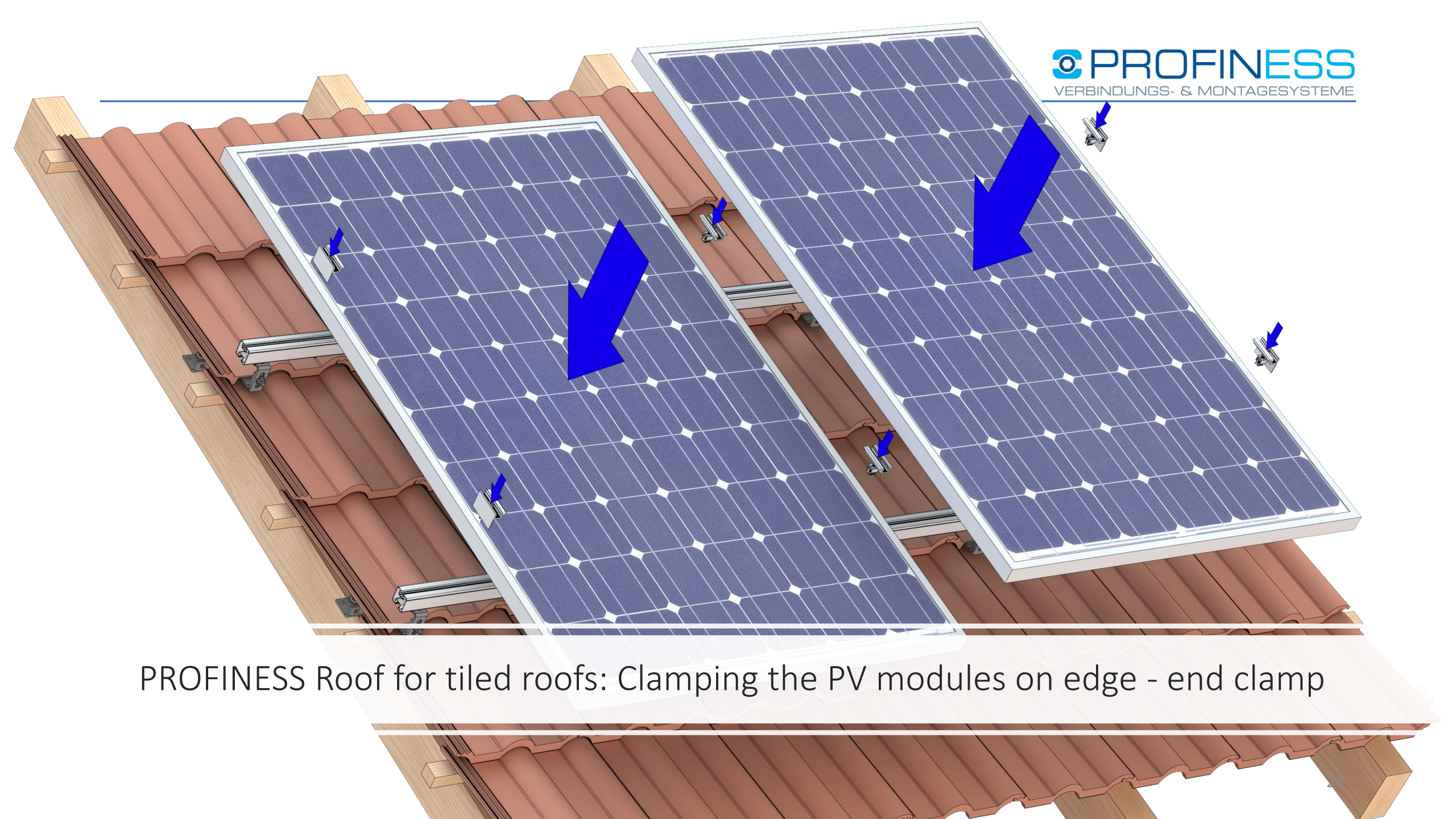
- The sliding blocks can be swivelled sideways into the upper channel (M8) of the mounting rails.
- The lock washer is then inserted through the centre or end clamp together with the Allen screw and screwed into the thread of the sliding block.

PROFINESS Connect Quick module clamps



- Klick Fix clamps are already pre-assembled and can be swivelled in sideways with light force.
- The screw can then be tightened
- Caution - **Do not hammer in** click clamps!





PROFINESS Roof for tiled roofs: Clamping the PV modules on edge - end clamp

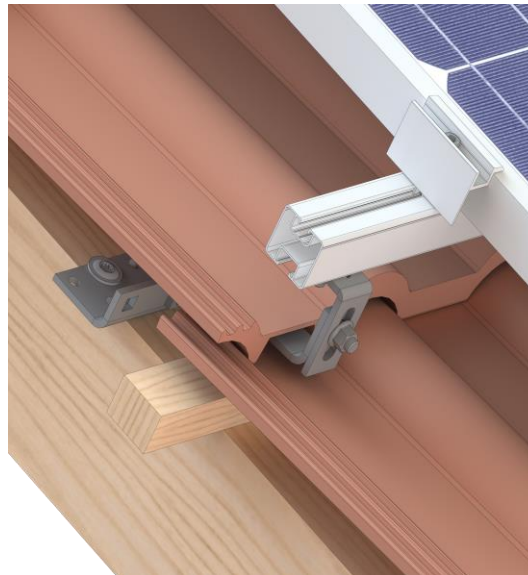
Module installation - Positioning the end clamp

Place a module on the module mounting rail and screw on the end clamp. To do this, fit the end clamp just before the end of the module and push it onto the module. Make sure that the screw can be screwed into the slot nut or square nut (for click system) without force to prevent the screw from being overtightened in the thread during installation.

Ensure that the click module (when using the click clamp) is fully engaged in the slot channel.

Now tighten the screw firmly (**tightening torque max. 12-14 Nm for screw and sliding block or max. 8-10 Nm for the screw connection of click clamps**).

Check whether the end clamp clamps the module with the clamping surface specified by the module manufacturer and whether this is within the clamping range of the modules.



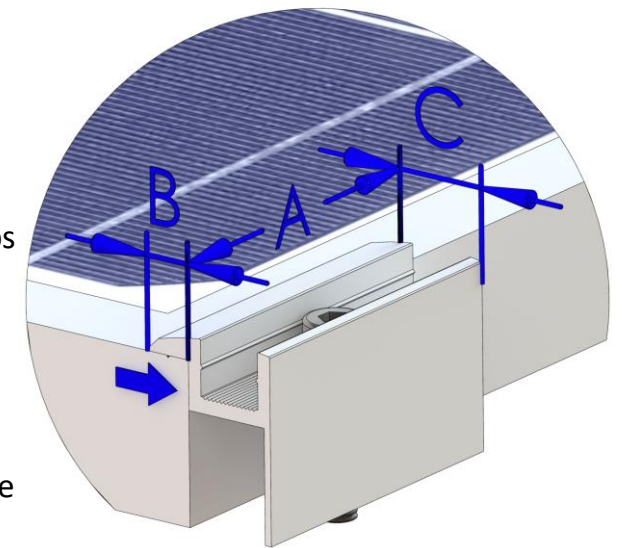
Module installation - Positioning the end clamp at the row end

End clamps are installed at the end of the module row or an expansion gap. To do this, attach them to the slot nut that you previously clicked into the slot channel and slide the clamp onto the module. Now tighten the screw.

(Tightening torque max. 12-14 Nm for screw and sliding block or max. 8-10 Nm for screw connection of click clamps).

Make sure that the end clamp clamps the module frame on the clamping surface specified by the module manufacturer.

The distance between the module frame and the end of the rail must be at least 35 mm if an end cap is used.



- A = Clamp length (70 mm)
- B = Contact surface of the clamp (10 mm)
- C = Total width of clamp (30 mm)

Installing the modules - centre clamp

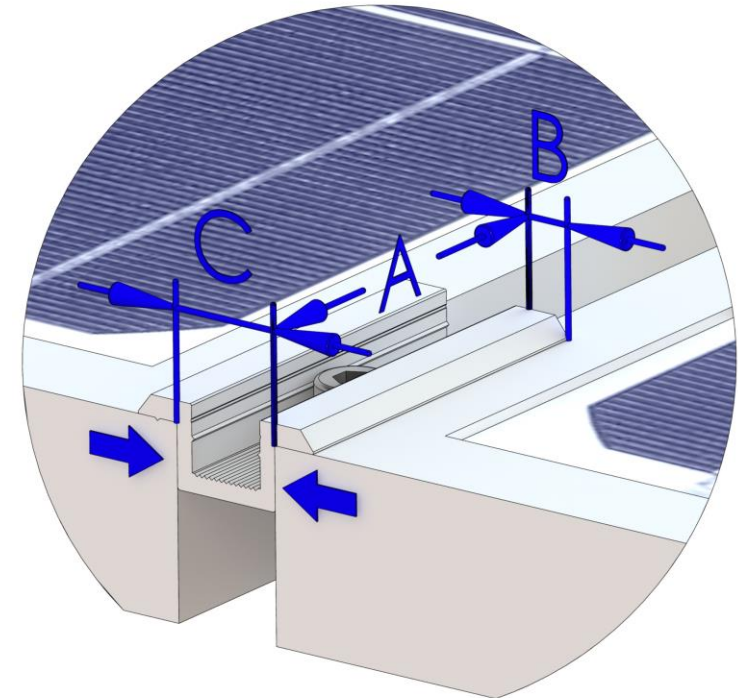
To install the centre terminal, attach it to the module support as previously described in the chapter on end terminals and slide it onto the module.

As with the end clamp, make sure that the click modules (for click clamps) are clicked in correctly and that the screws can be turned easily in the threads.

You can now slide the next module under the centre clamps and tighten the screws **(tightening torque max. 12-14 Nm for screw and sliding block or max. 8-10 Nm for the screw connection of click clamps)**.

We recommend the use of earthing plates ('Grid Potiklemme') to facilitate potential equalisation. This must be fitted before the centre terminal is installed. The earthing plate is pressed against the module support when the centre clamp is installed and thus establishes potential equalisation between two modules.

You can align the modules in the upper module row using a bricklaying cord or a levelling device. Slide the module under the centre clamps and tighten the screws.



A = Clamp length (70 mm | for standard)

B = Clamp contact surface (10 mm)

C = Clamp spacing (30 mm)

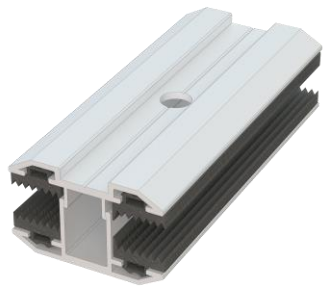
Module clamps for frameless modules

Frameless PV modules (laminates) are installed using laminate end clamps and laminate centre clamps.

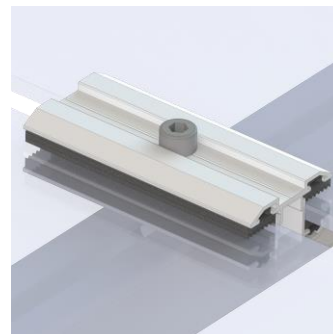
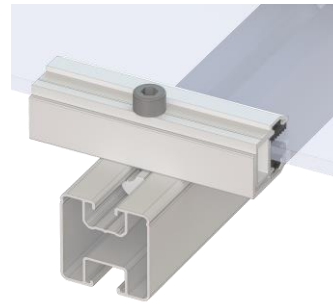
Depending on the glass thickness and module surface, different clamping ranges and lengths are available. Standard in stock is an 80 mm clamp for 6.5 - 8.5 mm glass thickness (e.g. Firstsolar). The usability of the module clamps must be approved by the module manufacturer (certification).

In principle, laminate clamps may only be used with frameless glass modules if the modules are installed transversely and the clamping is carried out 'above and below' on the long side of the frame.

Centre clamp
for glass modules



End clamp
for glass modules



Clamp: 80 mm length

Two-piece, including EPDM. With approval for various module manufacturers, incl. First Solar.

An additional M8x35 screw + lock washer is required



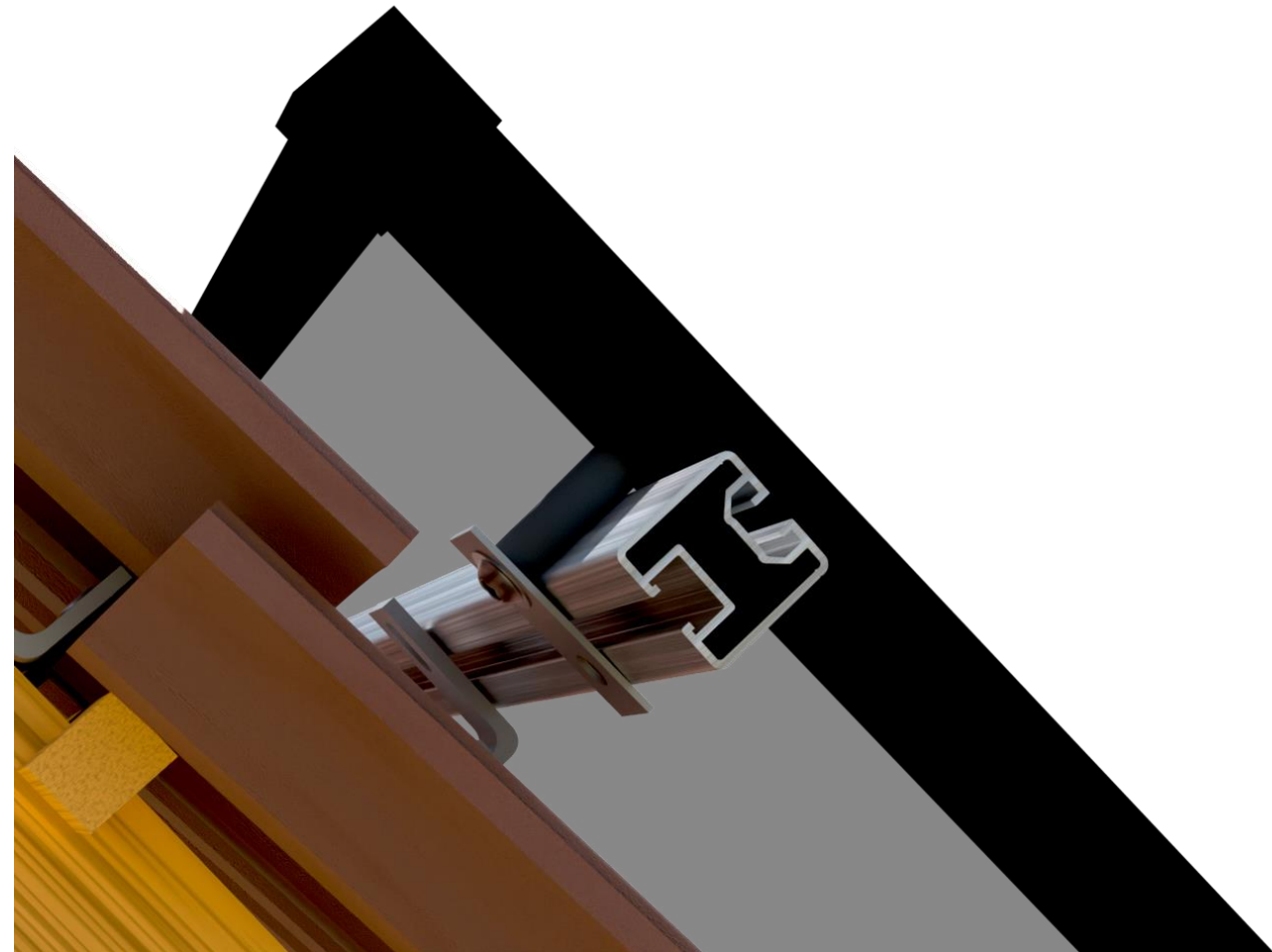
For vertical mounting of the modules

If the installed modules have a higher slope, it is recommended to secure the bottom row of modules against slipping. This also applies to modules that are not followed downwards by another module (e.g. in front of obstacles).

To do this, fit two screws (usually M6x20/M8x20 mm) with two nuts in the holes in the module frame, above the bottom rail section, so that this set touches the rail section after installation.

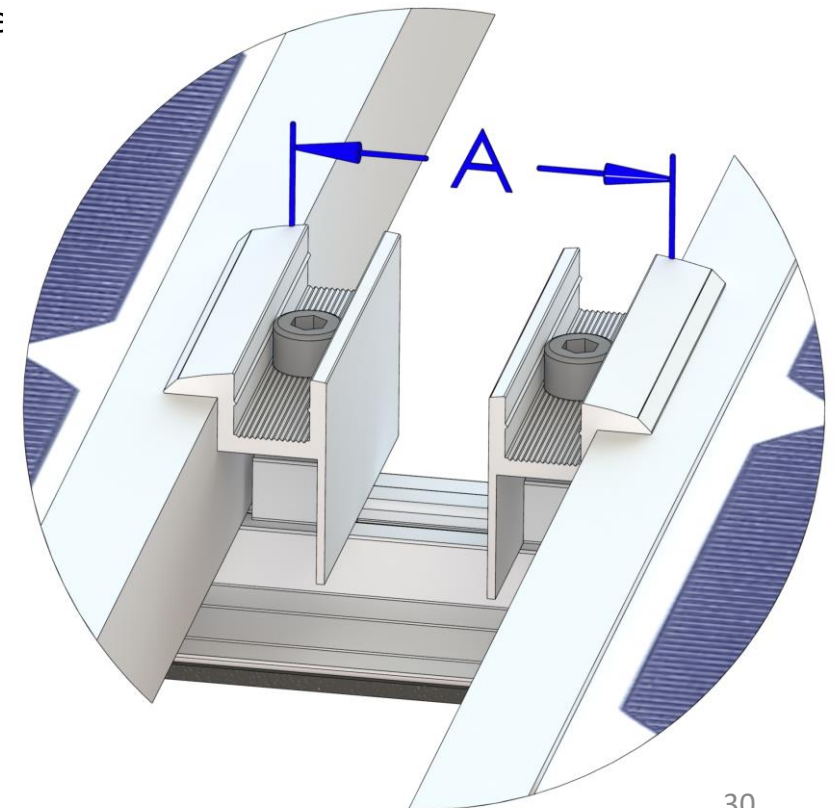
If the holes in the module are larger, use screws with a larger diameter.

Alternatively, fit an anti-slip protection to each of the two upper holes of the module (as shown here on the right). Then hook the module onto the upper mounting rail (40x40) and finally attach the centre and/or end clamps. Installation without clamps is not permitted.



PROFINESS Roof for tiled roofs: Expansion gaps

- If the module row is longer than 15 metres, the module assignment must be separated by replacing a middle clamp with two end clamps. The mounting profile must be separated between the end clamps and connected using a profile connector. The connector can be screwed into one of the two module mounting rails using self-tapping screws, but not into both. Alternatively, the connectors can be omitted so that the next mounting rail starts a few centimetres apart.
- The positioning of the expansion gaps must be adapted to the local conditions and the different material properties.
- Expansion gaps must not be built over with modules, as otherwise the effect of the ϵ be achieved in another way, e.g. with a cable bridge.

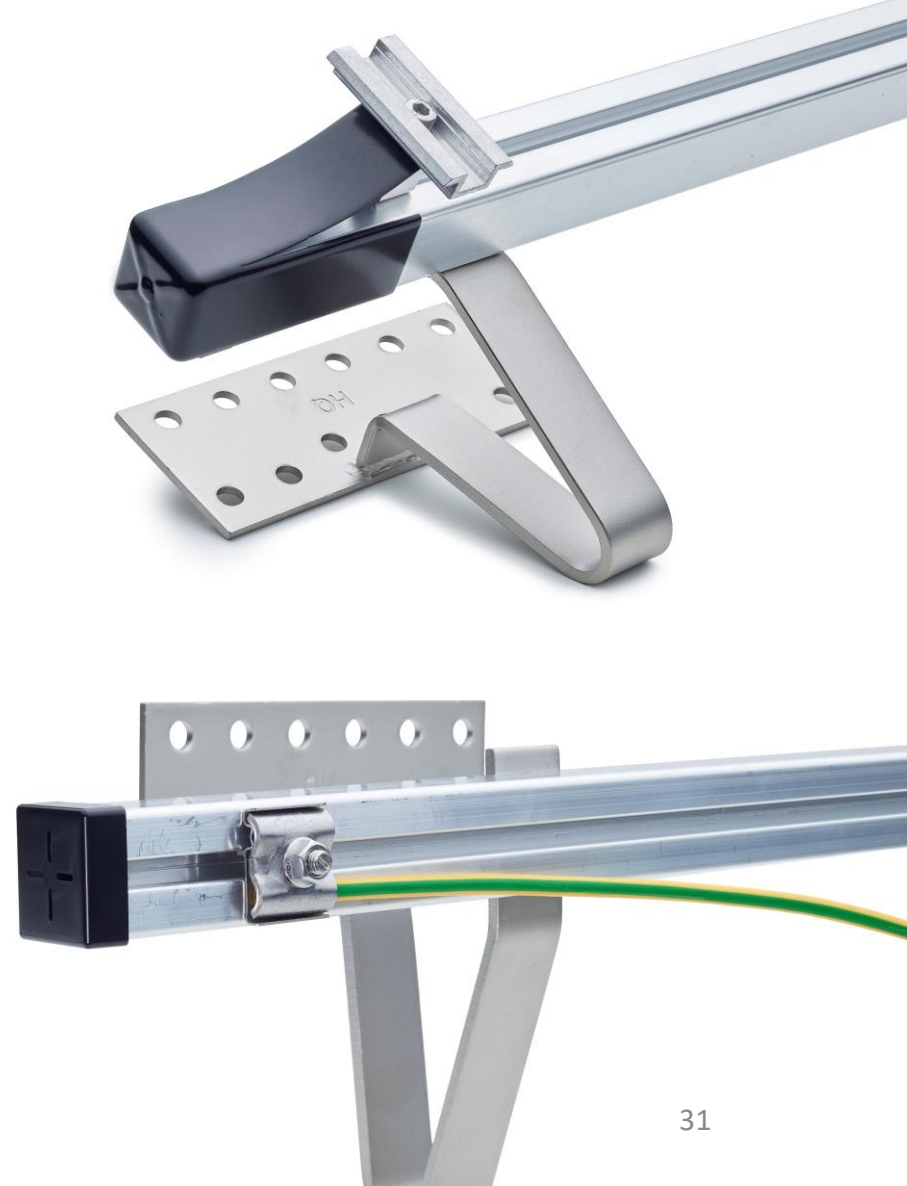


Cover caps

PROFINESS offers matching cover caps in various designs and colours for the standard 40x40 mm and 80x40 mm profiles.

Grounding clips

To ensure potential equalisation, we offer various grounding clips for the module rows as well as grounding clamps for the rail channel. It is essential that you discuss the topic of potential equalisation and earthing of your PV system with your installer or electrician on site.



Introduction

On the following pages you will find further installation instructions, which refer in particular to building regulations and standards. These guidelines must be observed when installing any PROFINESS mounting system.

Please read these installation instructions carefully before installation and keep them for future reference. Always check whether a newer version of these installation instructions is available online (<https://www.profiness.de/-Downloads>). If you have received a project plan including project statics for your project, these instructions are only complete including this project plan.

These installation instructions deal with the installation of PROFINESS mounting systems for pitched roofs with roof tiles/roof tiles.

Fundamentals

These installation instructions are intended for persons with professional qualifications who have been instructed by the photovoltaic system operator.

Extensive knowledge is required to install PROFINESS fastening systems on tiled roofs. We recommend having the fastening carried out or supervised by a trained roofer or similarly qualified person.

The various components of the systems are made of aluminum and stainless steel. This ensures high corrosion resistance and the longest possible service life, as well as the possibility of almost complete recycling.

At least one copy of the Profiness installation instructions must be available to the installers carrying out the work by the time the installation work is completed.

General safety instructions

The following general safety instructions must be observed when installing PROFINESS systems.

Systems may only be installed and put into operation by persons who are able to ensure that they are carried out in accordance with the regulations due to their professional qualifications (e.g. training or activity) or experience.

Before installation, it must be checked whether the product meets the static requirements on site. For roof systems, the on-site load-bearing capacity of the roof must always be checked.

National and local building regulations, standards and environmental protection

regulations must be complied with. Occupational safety and accident prevention regulations, corresponding standards and regulations of the employers' liability insurance association must be complied with! In particular, the following must be observed:

- Safety clothing must be worn (especially hard hat, work shoes and gloves).
- The regulations for working on the roof (e.g. Fall protection, scaffolding with safety gear from an eaves height of 3 m, etc.) must be observed.
- In principle, at least two people must be present on the construction site during installation.

The installation instructions of the respective module manufacturer must be observed.

Equipotential bonding between the individual system components must be carried out in accordance with the respective country-specific regulations.

PROFINESS accepts no liability for any resulting defects and damage if our installation instructions and installation manuals are not observed and all system components are not used, or if components are installed or removed that were not purchased from us. A warranty is excluded in this case.

PROFINESS components are available in stainless steels of different corrosion resistance classes. In each case, the expected corrosion load for the respective structure or component must be checked.

The system must be properly maintained, checked and serviced. This includes regular visual inspections. We recommend an annual visual inspection. All system components must be checked for damage caused by e.g. weather influences, animals, dirt, deposits, build-up, vegetation, roof penetrations, seals, stability and corrosion.

In addition, the tightness of screw connections must be checked and, if necessary, tightened in accordance with the tightening torques specified in the installation instructions.

After exceptionally strong impacts (e.g. from earthquakes, heavy snowfall, storm events, etc.), the system must always be checked. This inspection must be carried out by qualified specialist companies or experts. It must be checked whether the system has visible or hidden defects that will no longer sufficiently guarantee the load-bearing capacity, stability and functionality of the system in the future. If the inspection reveals plastic deformation, e.g. in the module clamping area, or damage, such components must be replaced.

The system is dismantled in reverse order to the assembly steps

Intended use

PROFINESS provides you with a fastening system for mounting photovoltaic modules. The design is for photovoltaic modules only. If the installation deviates from this, it is not in accordance with the actual intended use. Observance of these mounting instructions is a basis for the intended use. PROFINESS GmbH is not liable for damage resulting from disregard of the installation recommendations, nor if the products are misused or not used as intended.

Before starting installation, the compatibility of the roof cladding and the installation system must be checked and ensured. The roof must be checked for damage of any kind. These must be recorded in the roof inspection report. Repair work may be necessary.

In the case of uneven roofs or roof waterproofing, compensatory measures may need to be taken to ensure even load transfer.

To ensure that the substructure rests flat on the roof cladding, **the roof surface must be cleaned before** the start of construction and impurities such as moss, leaves, dirt, stones, etc. must be removed.

The necessary distances to the roof edges specified in the project documents must be observed. The maximum module array size depends on the type of roof. For roofs with substrate or gravel fill, ensure that a sufficiently non-slip connection is created.

The surface load must not exceed the residual load-bearing capacity of the building. Care must be taken to ensure that the drainage of rainwater is not impeded. The roof drainage system must be included in the system planning.

General information - standards and guidelines

Every photovoltaic system must be installed in accordance with the specifications in these installation instructions and the project report.

These installation instructions are based on the state of the art and many years of practical experience with PROFINESS systems. It must be ensured that only current and complete installation instructions are used for installation and that a printout of the installation instructions is kept in the immediate vicinity of the system (subject to technical changes).

The project report is part of the installation instructions and is prepared on a project-specific basis. All information in the project report must be adhered to. In the project report, the static calculations are carried out on a site-specific basis. The PROFINESS mounting systems must be designed and planned using the PROFINESS software (Profiness Planning Tool) or by a structural engineer commissioned by Profiness.

As the individual characteristics of each roof must be taken into account, expert clarification must always be carried out before installation. Before installation, the PV system installer must ensure that the existing roof covering and roof substructure are designed for the additional loads that will occur. The installer must check the condition of the roof substructure, the quality of the roof covering and the maximum load-bearing capacity of the roof structure. Contact a structural engineer directly on site.

When installing the PV systems, the module manufacturer's installation instructions must always be observed. In particular, it must be checked whether the module manufacturer's specifications regarding the module clamping specifications (clamping surface and clamping area on the module) are complied with. If this is not the case, the module manufacturer's declaration of consent must be obtained on site before installation or the frame must be adapted to the module manufacturer's specifications.

The requirements for lightning and surge protection of mounting systems for PV systems must be produced in accordance with DIN and VDE regulations. The specifications of the responsible energy supply company must be complied with. Care must be taken to ensure that the PV system to be installed does not impair the effect of the existing lightning protection system. Care must also be taken to ensure that the PV system is designed in such a way that it can be included in the protection area of the building's lightning protection system. Separation distances

between the PV system and the lightning protection system must be taken from the relevant regulations and complied with. Fire protection regulations must be observed during installation, e.g. no fire protection walls must be built over and appropriate distances must be maintained.

If changes are made to the roof covering, the manufacturer's instructions must be observed. During and after installation, the frame parts must not be walked on or used as a climbing aid. There is a risk of falling and the roof covering underneath could be damaged. Before installation, the installer of the photovoltaic system must ensure that the installation is carried out strictly in accordance with national and site-specific building regulations, occupational safety and accident prevention regulations, standards and environmental protection regulations.

Every person who installs PROFINESS PV mounting systems is obliged to inform themselves independently about all rules and regulations for technically correct planning and installation and to comply with them during installation. This also includes obtaining the current status of all rules and regulations.

The installation of the PV system may only be carried out by appropriately trained specialists who can ensure that it is carried out in accordance with the regulations.

Detailed information on tiled roofs

The installation of PROFINESS mounting systems and the photovoltaic system may only be carried out by adequately trained specialists. The components of the frame construction must not be used as stepping aids and the modules must not be stepped on. When working on the roof, there is always a risk of falling and falling through, resulting in a risk of injury or death. Suitable safety devices for access and for protection against falling (e.g. scaffolding) and falling parts must be provided.

The client must inspect both the condition and the structure of the roof construction before commencing installation. The installation instructions (and, if available, the project report) must always be followed during installation.

Failure to observe the installation instructions may result in damage to the building and the photovoltaic system to be installed.

Before installation, check that all frame parts are intact. If parts are damaged, they must not be installed.

The bolted connection between the roof hook and the roof structure (rafters) has the task of transferring the occurring forces to the supporting roof structure in order to ensure the stability of the system to be installed.

Observe the dimensions of the rafters and the specifications for screw installation on the rafters.

We recommend stainless steel plate head screws with building authority approval for screwing roof hooks to rafters.

Before installation, it must be checked whether the roof structure is fundamentally capable of bearing the load of the photovoltaic system and the resulting changes in load. A structural engineer must be consulted on site for this purpose. In the case of existing roofs, the condition of the wooden structure must also be assessed on site.

The regional and currently valid building regulations must be observed. Under the given conditions, the screw connection must be calculated in accordance with the building authority approval. The result shows whether the selected number of screws can transfer the forces of the roof hooks into the roof structure.

The pan head screws may be used for fastening steel/stainless steel or aluminum roof hooks to wood types with certain minimum requirements, which can be found in the building inspectorate approval. We can provide you with these on request.

User agreement

PROFINESS mounting systems are sold within the framework of a sales contract. Neither the purchase by third parties nor installation and processing are carried out in the name of or on behalf of PROFINESS GmbH.

Processing and installation must be carried out by specialist personnel qualified for this purpose and in compliance with these installation instructions. Planning and design of the project must be carried out by a PROFINESS employee using the PROFINESS planning or structural analysis tool.

PROFINESS GmbH is not responsible for calculating the statics of the roof structure, obtaining and documenting the approval of the roof manufacturer for the installation of corresponding fastening components on the roof (in terms of the warranty claims against the roof manufacturer or producer) and the professional installation.

Damage and faults as well as insufficient or limited function of the assembly system due to faulty installation and/or installation deviating from the assembly instructions and/or project report shall exclude a material defect for which PROFINESS GmbH is responsible. The purchaser's rights due to a material defect shall lapse in the event of improper installation.

Any guarantees only apply if all components of the mounting frame have been purchased from PROFINESS GmbH.

Disclaimer

The information on dimensioning contained in this document is merely practical advice. Binding, project-related frame statics can be generated using the PROFINESS planning software (PROFINESS Planning or Statics Excel Tool)

As the installer, you are responsible for the professional execution of the installation. PROFINESS GmbH is not liable for dimensioning information contained in commercial offers and order confirmations.

As the installer, you are responsible for the mechanical durability of the installed connections to the building envelope, and in particular for their tightness. PROFINESS GmbH components are designed according to the expected loads and the current state of the art. For this design, you must provide all the necessary framework conditions (information on the roof structure, local loads, etc.) in writing in the PROFINESS inquiry forms at the enquiry/order stage.

PROFINESS GmbH is not liable for improper handling of the installed components. Due to the risk of corrosion, installation near the sea must be clarified with PROFINESS GmbH depending on the project.

Wearing parts are generally excluded from any warranties.

Documentation

To guarantee traceability in the event of complaints or problems, archive existing product/packaging labels.

Standards and regulations to be observed

Before and during the installation of a photovoltaic system, the module manufacturer's installation instructions must be observed.

- The following regulations / standards / provisions must also be observed:
BGV A2 Electrical systems and equipment
BGV C22 Construction work
BGV D35 Ladders and steps
BGV A1 Accident prevention regulations
DIN EN 1995-1-1 +
DIN EN 1995-1-1/NA Timber structures: Mechanical connections
DIN EN 1991-1 +
DIN EN 1991-1/NA Actions on supporting structures
DIN 18299 General regulations for all types of construction work
DIN 18451 Scaffolding
Subject to technical changes.

At least one copy of the PROFINESS installation instructions must be available to the installers carrying out the work by the time the installation work is completed.

Grounding

Equipotential bonding between the system components must be established in accordance with the country-specific standards and regulations. In some cases, system and material-specific properties can be used for this purpose.

These installation instructions do not include an earthing concept. This must be created or calculated by the installer in accordance with the applicable guidelines and standards. However, the PROFINESS Connect Grid earthing terminal can be used to establish a connection to the substructure.

Profile connectors are used to achieve an earth-locking connection of the module support profiles (only when using continuous profiles in a cross-connection).

In addition, the modules can be connected to the mounting system using the PROFINESS Connect Grid equipotential bonding terminal under the center terminals. Please also observe the module manufacturer's specifications.

Please do not confuse "earthing" with lightning protection! A specialist company must be contacted for the installation of a lightning protection system so that

they can draw up a project-specific lightning protection plan. The module manufacturer's installation specifications must also always be observed in this context.

Dismantling

Dismantling a PROFINESS mounting system may only be carried out by adequately trained specialist personnel. Observe the same guidelines, standards and safety instructions that apply to installation.

Carry out the disassembly in reverse order to the installation described above.

Disconnect the photovoltaic system from the grid before dismantling and disconnect all cables / electrical lines and plug connections of the modules and the mounting system.

Then uninstall the modules and store them on a secure surface. Carry out the disassembly professionally and properly to prevent damage to the photovoltaic modules.

Now dismantle the mounting system. If the mounting system leaves openings in the roof structure / roof cladding, these must be professionally sealed in accordance with the instructions and guidelines of the roofing trade.

Disposal

The PROFINESS mounting system consists of aluminum, stainless steel, steel and cellular rubber components. These can be recycled after deinstallation. Ensure that they are disposed of correctly by a specialist company and check the applicable national standards and guidelines.

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Subject to change without notice. Product illustrations are examples and may differ from the original.

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