

INSTALLATION INSTRUCTIONS
FLAT ROOF SUBSYSTEM PROFINESS3006 / 4006

English

v. 1.5



We are pleased that you have decided on an PROFINESS system and thank you for the trust you have placed.

The substructure system PROFINESS3006 can be used for mounting solar modules on flat roofs to 5 ° roof pitch. The maintenance of the modules is done by module terminals.

Please check the completeness of the components based on your delivery note before construction starts.

Condition for ensuring the warranty is only in compliance with these mounting instructions.

Observe the following notes to the laws, regulations and technical rules

When setting up solar energy installations, for the country enacted laws and regulations at the state-, federal- and European level have to be observed.

It applies the generally recognized rules of technology, which are usually formulated in the form of standards, guidelines, rules, regulations and technical rules of state and federal agencies, energy supply companies and industry associations and -committees in the relevant fields.

The entire PV system must be installed according to the generally recognized rules of technology. Please observe the accident prevention regulations of the professional associations (professional association regulation for health and safety at work), in particular:

BGV A1	General provisions
BGV A2	Electrical systems and equipment
BGV A3	Electrical systems and equipment
BGV C22	Construction work
BGV D36	Ladders and Steps

Please note all public regulations and standards, DIN standards, TAB (technical connection conditions), accident prevention regulations, the guidelines of the Association of Insurers (VDE guidelines for fire protection), the technical rules of the German Roofing Trade and General guidelines (eg wooden structures, roofing - and roof sealing works) in the planning, construction, operation and maintenance of grid-connected PV systems.

These are in particular (not exhaustive):

DIN / VDE 0100, especially part 712 (Erection of power installations with nominal voltages up to 1000V)

DIN / VDE 0289 (Electrical wiring)

VDI 6012 (Decentralised energy systems in buildings - photovoltaics)

DIN / VDE 0185, Teil 1- 4 (Lightning protection)

DIN 1055, Teil 4 (Wind load)

EN 1991-1-4 (Wind loads Eurocode 1)

DIN 1055, Teil 5 (Snow load)

EN 1991-1-3 (Snow loads Eurocode 1)

DIN 18338 (Roof covering and roof sealing works)

DIN 18451 (Scaffolding work)

DIN 1052 Part 1 and Part 2 (Dimensions of the substructure (wooden structures))

TAB (The technical specifications of the power supply company)

DIN 18015 (Planning and construction of electrical installations in residential buildings)

VDEW-Guideline for connection and parallel operation of generators in the Low-voltage grid

DIN 4108 (Heat protection)

Energy saving regulation (ENEV)

Attention

Unauthorized modifications and inappropriate use of our components in the assembly and in the construction lead to the exclusion of any liability claims.

We would like to point out once again to note the relevant accident prevention regulations (UVV) when working on the roof (inter alia VBG 37 construction work, § 12 fall protection).

Furthermore, we point out that prior to the planning and construction of the plant of the building (structural, rafters, battens), and the roof skin or film on the roof of merchantability and tightness should be checked.

In foil roofs is to ensure that the compatibility of the roof sheet with the coating of the support surface used by M5-METAL is given.

The module dimensions acc. the data sheet must be observed in order to ensure the ventilation of the PV system (see data sheet).

In use of additional bases (eg building protection mats), error-free water drainage must be ensured in order to prevent accumulation of dirt or moss.

The use of additional bases increases the distance of the system to the roof! This can lead to a negative influence of statics by wind. This value is to be included when calculating the static / loading with.

Professional and knowledge requirement of processors and assemblers

PROFINESS assumes that the assembly is done only by qualified personnel with a recognized qualification (by a state or federal organization) or equivalent knowledge for the respective department.

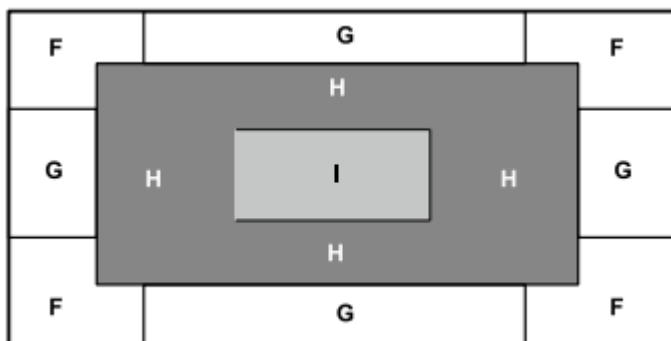
2. Definition of roof areas

Note that the height of the building must not be greater than the narrowest width of the building.

The substructure system PROFINESS3006 flat roof was structurally verified in the following conditions:

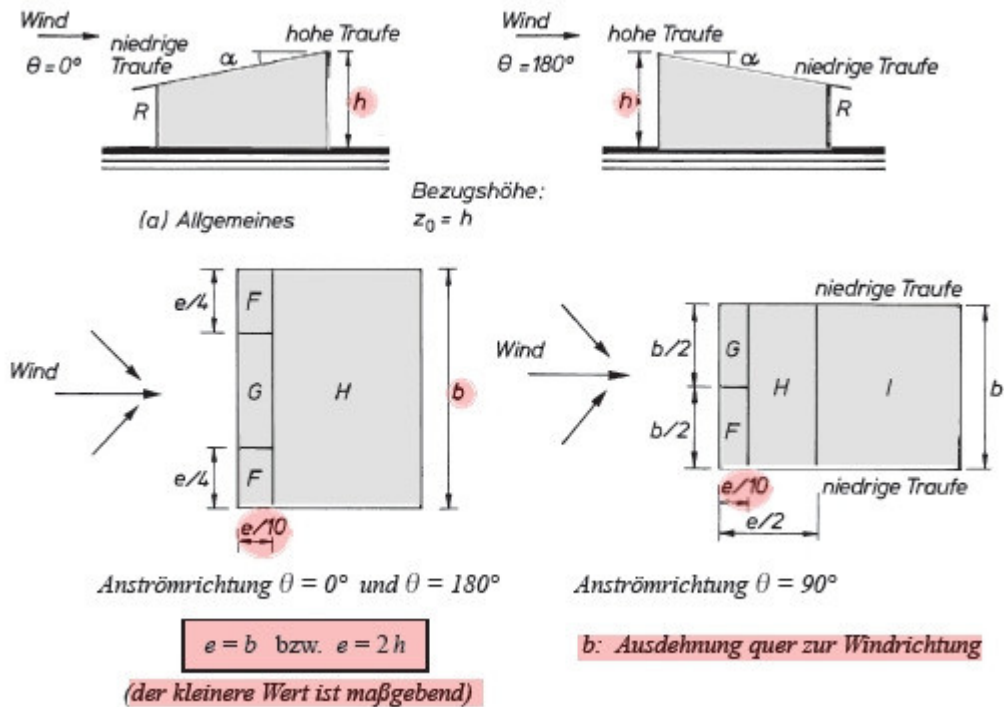
Module length: 1.480 – 1.700 mm

Module width: 950 – 1.000 mm



Edge distances

The roof is to be divided into the following areas:



=> From this it can be read that the edge distance is not a fixed value, but depends on the specific geometry of the building. Specifically, the height and the width (transverse to the wind direction) flow within.

Eg building height: 9m. => $E = 2 \times 9\text{m} = 18\text{m}$. => $E/10 = 1.80\text{ m}$

For other building geometries, this value can also correspond lower.

Conditions and weighting

The flat roof system PROFINESS3006 must be weighted depending on the wind zone, terrain category and building height.

The Suspension System Flat roof PROFINESS3006 one of the "low ballast systems", but is not entirely without additional weighting against lifting or moving the plant. To determine the weighting we offer a structural analysis by an independent structural engineer to.

In foil roofs it is important to know the manufacturer data and to ensure that an assembly with the substructure system PROFINESS3006 on this slide is possible. In foil roofs with

insulation, it is imperative to know the pressure load limit in for example N/mm², to prevent damage to the roof.

When designing and planning, the following calculation rules apply depending on the material used:

DIN 4113-1 (Aluminum constructions)

DIN 1052-2 (Wooden buildings)

DIN 18334 (Carpentry and timber types)

DIN 18360 (Metal construction work)

DIN 18800 (Stealbuildings, measuring and construction)

In this mounting system, the clamping of the modules is done on the short side of the module frame. The approval of the module type used for the specified clamping range is to consider.

3. Mounting options

The flat roof system PROFINESS3005 can be built in one or east-west orientation.

4. System components

- 1** Elevations assembled, folded for transport. With Regupol resist solar pasted with or without aluminum cladding.
- 2** Connectors for connecting the base carrier to each other in the longitudinal direction.
- 3** Hex bolts M8x20 (to mount the connectors)
- 4** Locking nuts M8 (to mount the connectors)
- 5** Middle clamps (depending on the module height) + screws
- 6** End clamps (depending on the module height) + screws
- 7** Wind deflector plate made of aluminum 1700 mm long for mounting in one direction
- 8** Screws 5x16 + washer for fixing the wind deflector plate

5. Tool list

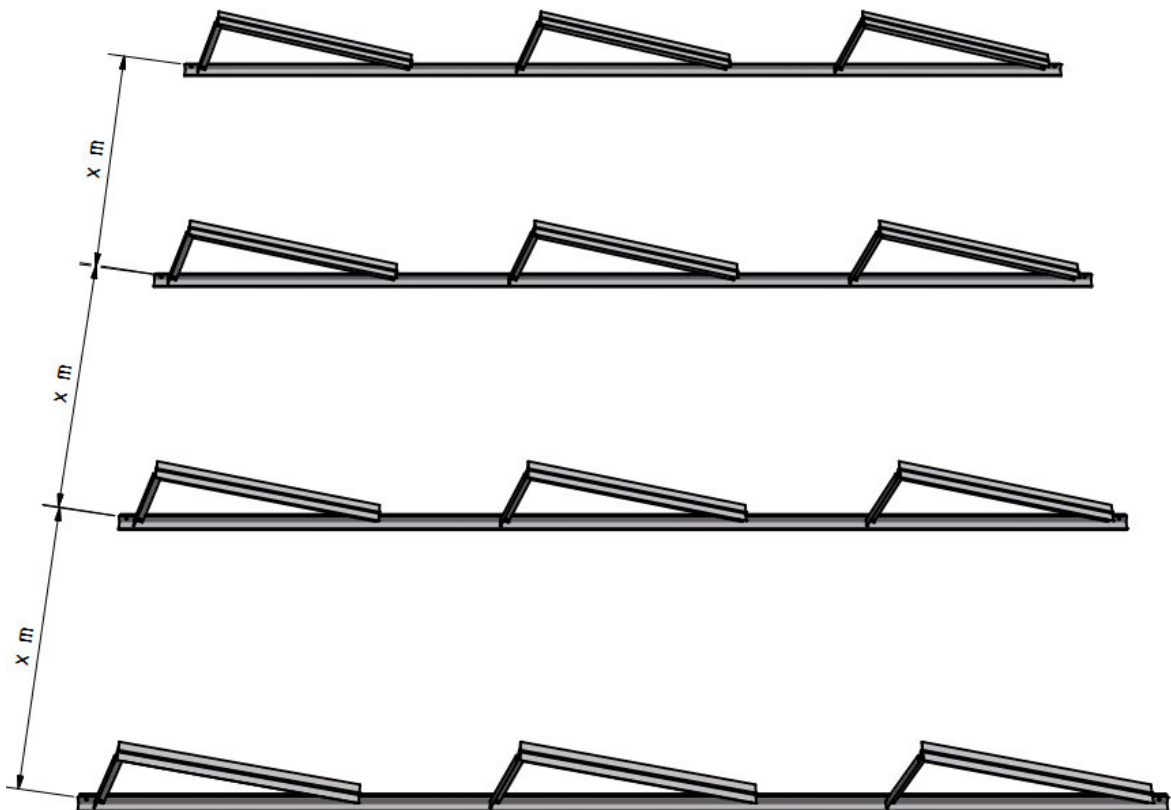
- 1** Marker and chalk line

- 2 Ruler and tape measure
- 3 External hexagon M8
- 4 Inner hexagon M8 and M5
- 5 Hacksaw/Flex
- 6 Cordless drill with external hexagon M8

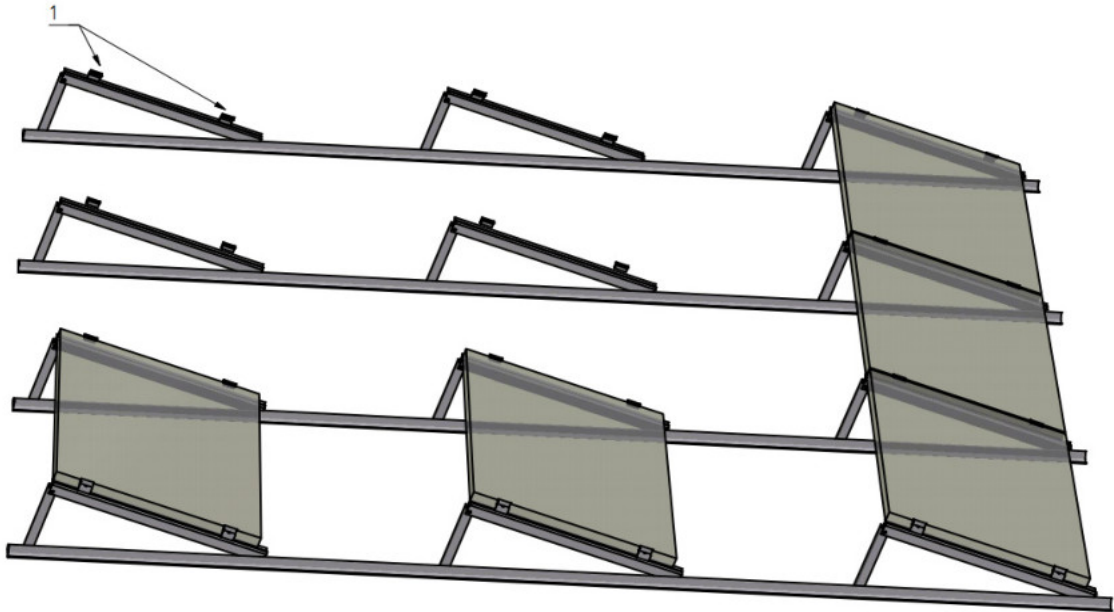
6. Mounting version South



Open pre-mounted triangles and attach rear support. Fix all external hex screws M8x20 with locking nuts M8.



Lay pre-assembled sections in coarse grid (module length + 20 mm).

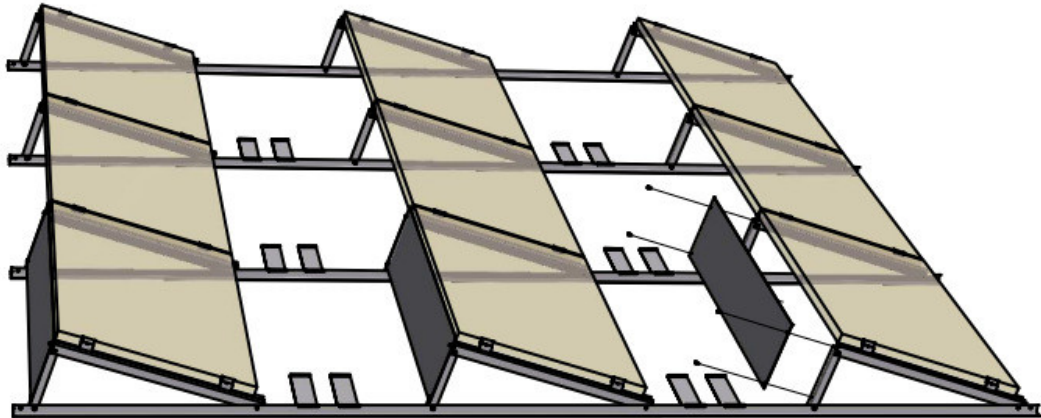


Replace and align modules (1) and fix them with the middle- and end clamps and allen screw M8 (15Nm).

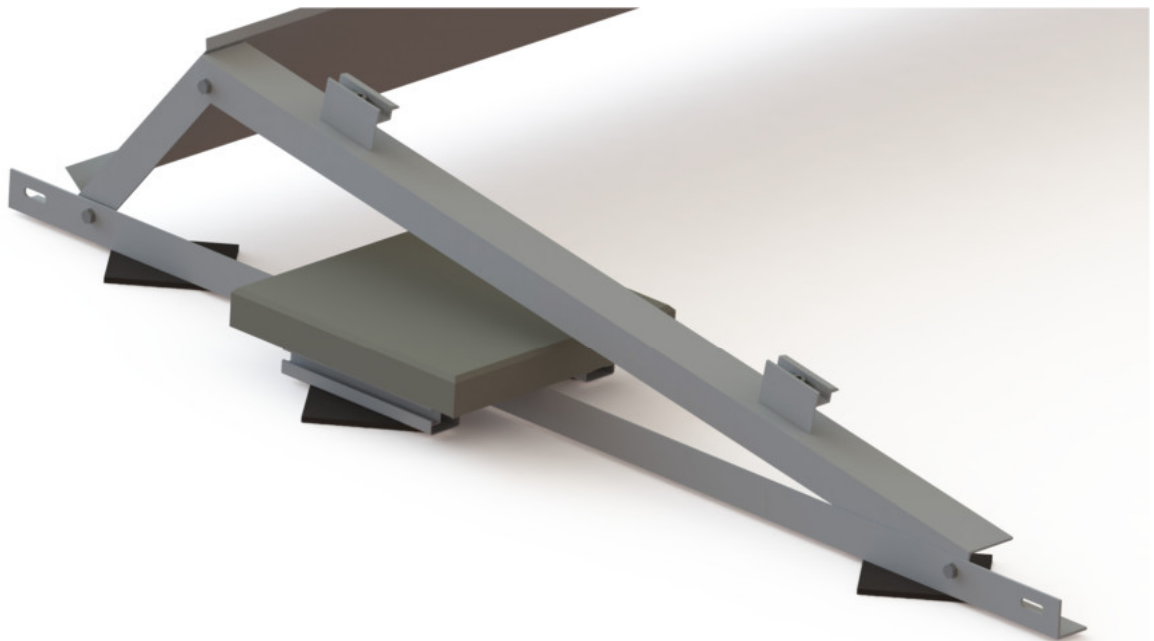
Screw together the floor beams in the longitudinal direction with the connectors, M8x20 and locking nut M8



Please let a **gap** between the module and the wind deflector of ~ 5cm, the module **has to touch** the bottom rail.



Mount the weighting acc. muster plan. Fit the wind deflector plate with screws 5x16 + washer in the struts.

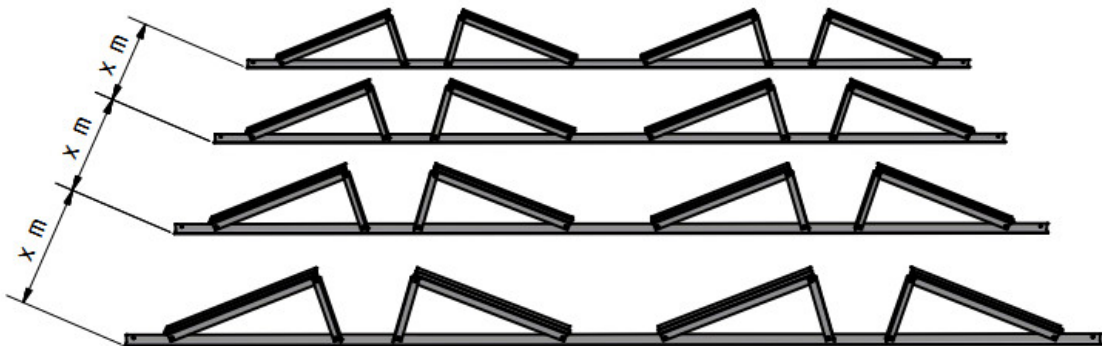


Put the ballast on the ballast holder over the bottom rail if the ballast is more than 5kg (in that case of <5kg you can put it into the wind deflector)

7. Mounting version East-West

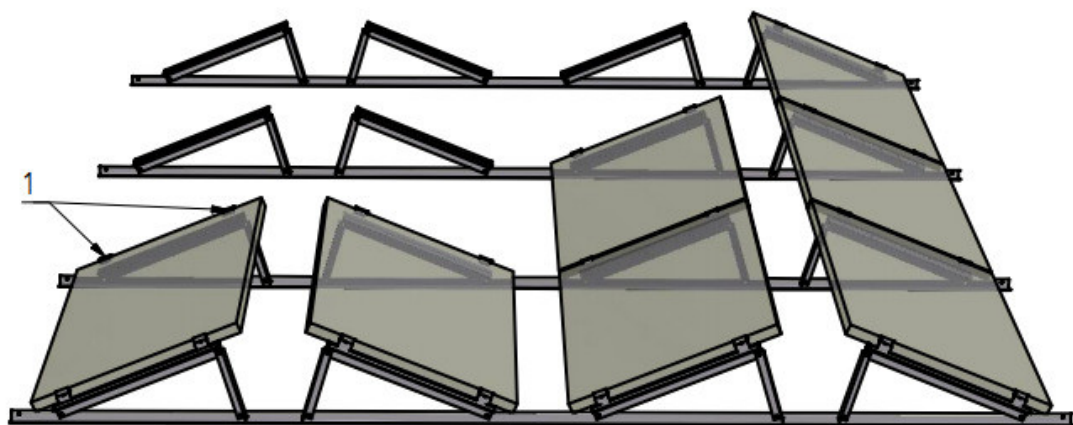


Open pre-mounted triangles and attach rear support for 15 degrees. Fix all external hex screws M8x20 with locking nuts M8 (30Nm).

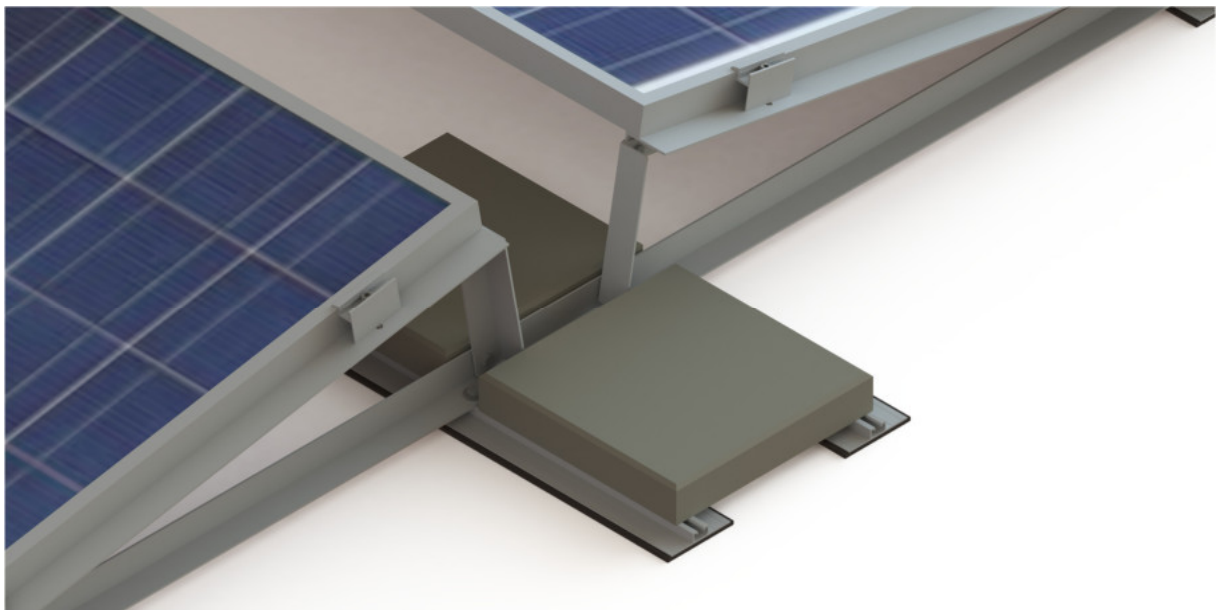
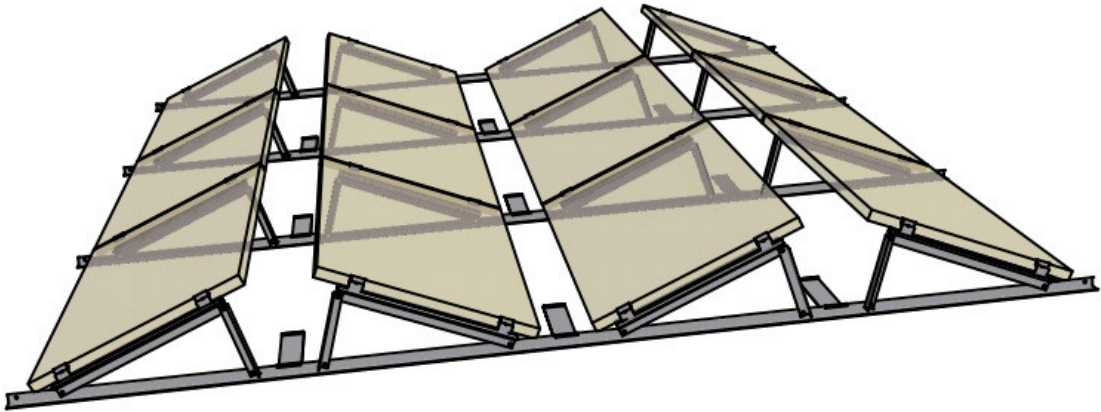


Lay pre-assembled sections in coarse grid (module length + 20 mm).

The module **has to touch** the bottom rail so in the middle the modules have a gap of ~ 25cm.



Replace and align modules (1) and fix them with the middle- and end clamps and allen screw M8 (15Nm).



Put the ballast on the feet according to the ballast plan and the order plan.

8. Lightning protection notice

In general, no additional lightning protection system is required for PV systems because the risk to the building by the solar system is not increased.

We point out that the lightning and surge protection of PV systems has to be done in accordance with the current specifications:

DIN / VDE 0185 Part 1 to 4

DIN / VDE 0100 Part 100 and 712

DIN / EN 62305 Lightning protection

DIN / VDE 0105 (Operation of electrical installations)

DIN / VDE 0298 (Electrical wiring)

VdS 2010

For detailed information please refer to the listed directives and standards.

In general, we recommend to include the mounting system and the module frame in the local potential equalization and use surge protection devices.

A potential equalization is always necessary when the used solar modules do not correspond to the protection class II and / or transformerless inverters are used.

The cross section of the equipotential bonding conductor must be the cross section of the DC main line correspond, but however, be at least 6mm² (copper).

Does the building have a lightning protection system and is the PV generator not within the scope of the capture device, so the module frame and mounting system must be integrated into the "external lightning protection" and additional overvoltage protection devices are installed. Electrically conductive connection must be executed at least 16mm² (copper).

9. Fire Protection

The following guidelines should be observed for the area of fire protection:

VDS 2023 (Guidelines for fire protection in buildings and structures)

VDS 2024 (Guidelines for fire protection for the installation of electrical equipment)

DIN 4102 (Fire behavior of building materials and components)