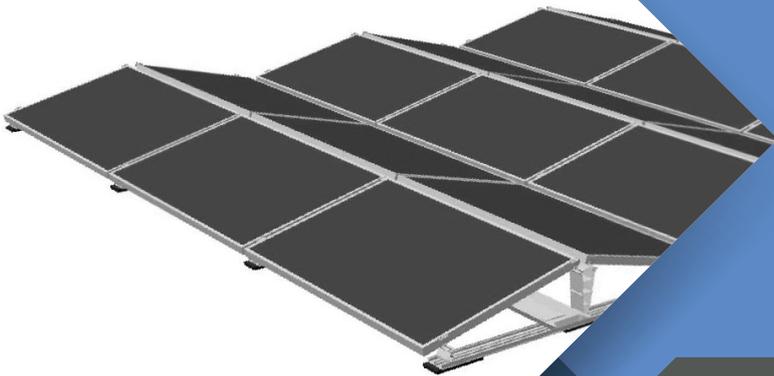


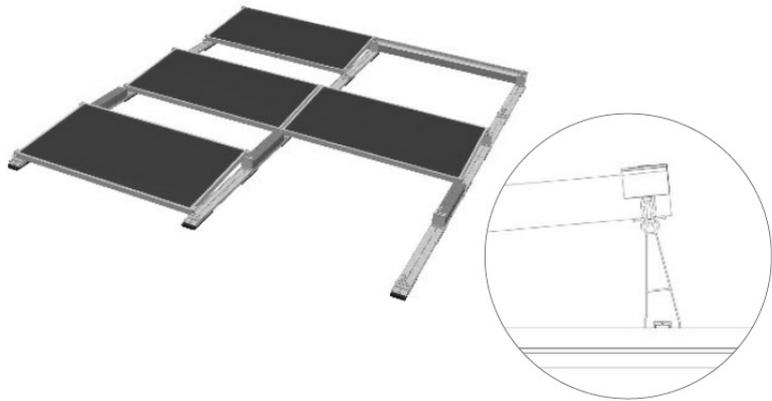


Yokohama Solar Solutions



Y-FIX

PRODUCT SHEET



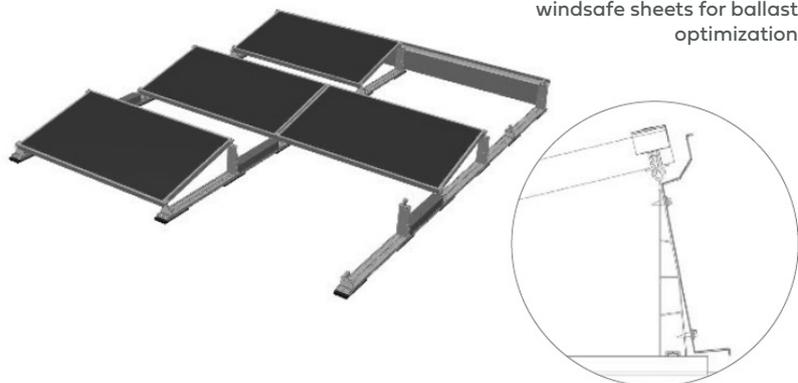
Y-FIX

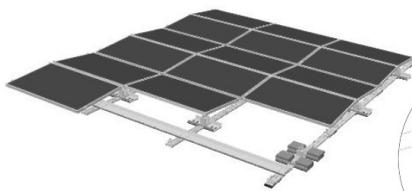
THE SUPPORTED FLAT ROOF SYSTEM

The system for flat roof installations of any size. With Y-Fix, there is a material- and tool-optimized system where modules can be mounted in closed rows and with a fixed elevation angle of 6° or 13° - with minimal additional loads. The components are connected to each other by the Y-Fix screw-in connector. A mechanical anti-slip device is always recommended for pitched roofs. The assembly is simply done by placing the pre-assembled Y-Fix supports on the base profile, then turning them 90° clockwise. The module is fixed with module clamps. The weighting can be placed in trays (optional) and on the base profile. Additional fastening of the mounting systems by the roof covering is not necessary.

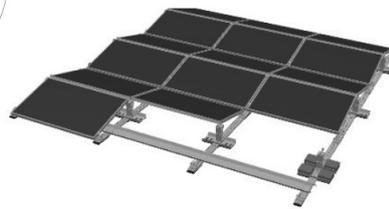
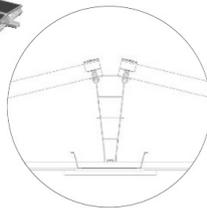
- Easy installation
- 6° to 13°
- Low ballast, optimized for wind dynamics
- No roof penetration
- Ideal for flat roofs
- Material and cost-effective

Simple orientation (e.g. to the south),
inclination: approx. 13°. With
windsafe sheets for ballast
optimization

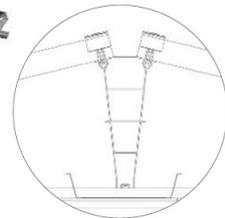




Double orientation (e.g. east-west), inclination: approx. 6°. For maximum use of space



Double orientation (e.g. east-west), inclination: approx. 13°. For maximum use of space



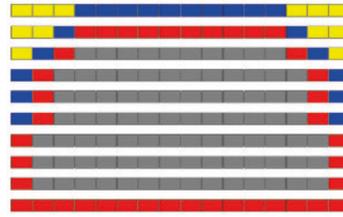
Statics

INFORMATION ON THE LIMITATION OF THE MODULE FIELD SIZES

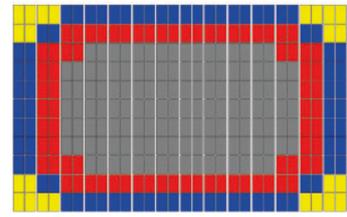
Due to the different linear expansion coefficients of the mounting system compared to the material of the roof covering, the roof cladding may be stressed by temperature differences. Depending on the roof covering of the building to be covered, the maximum module field sizes should therefore be limited in order not to damage the roof covering. On concrete roofs, for example, module field sizes of approx. 20 to 30 meters are possible without further concern. In order to avoid mechanical damage to the roof covering on roofs with foil covering, we recommend a maximum module field size of 10 m in this case, as well as suitable building protection systems compatible with the roof covering. When separating the fields, it should be noted that in the case of pitched roofs, the fields must be connected flexibly and that any lightning protection or equipotential bonding connections that may be required must be designed flexibly.

INFORMATION ON SURFACE PRESSURE AND EQUIVALENT SURFACE LOAD

The equivalent area load refers to the load acting on the roof structure over its entire area. In addition to the snow and wind loads already acting on a roof surface, additional loads from photovoltaic modules, mounting frame and any necessary ballasting are added to the area load. However, this has nothing to do with partially applied surface pressures that can affect a local area if these applied loads are introduced into the roof structure via small areas of supports or profiles. The pressures acting at these points are referred to as partial surface pressure.



Example: Roof layout
Simple orientation (e.g. to the south)



Example: Roof layout
Two-way orientation (e.g. east-west)



Depending on the roof waterproofing and the substructure or insulation under the waterproofing, these surface pressures can be absorbed to different degrees. If the surface under the waterproofing is solid, e.g. made of wood or concrete, there are usually no problems here. In the case of particularly soft insulation, however, the maximum acceptable partial surface pressure may be exceeded. It is therefore necessary to check on site that this is not exceeded. This can be done as follows:

Particular area pressure [kg/m²] =

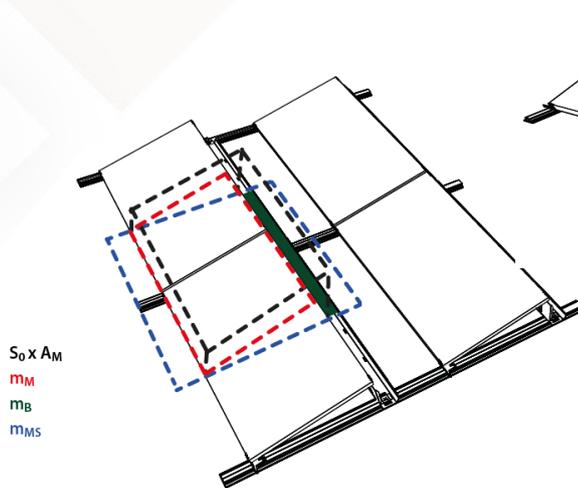
Sum of superimposed loads | Effective bearing surface of the building protection mat

Here is the sum of the superimposed loads based on one module:

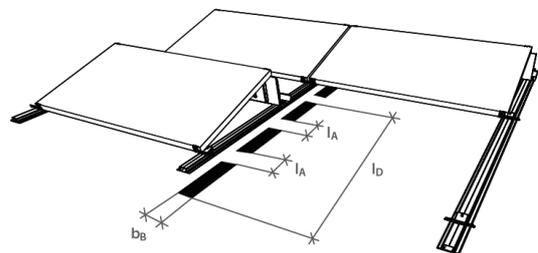
Weight of the module: **mM**
 + approx. 5 kg weight of the mounting system: **mMS**
 + ballasting per module: **mB**
 + snow load x module area: **S0 x AM**

And the effective bearing area of the building protection mat:

$A_{eff} = (\text{length of continuous profile per module row } l_D - \text{sum of the openings in the protective mat } l_A) \times \text{width of building protection mat } b_B$



$S_0 \times A_M$
mM
mB
mMS



If the surface pressure is exceeded, we will be pleased to advise you with individual solutions!

ADVICE FOR VERY THICK ROOF SEALING

In the case of very thick roof seals, for instance some bitumen seals, it is possible that uneven roof landscapes may result due to the joint coverings. Especially at high temperatures, the continuous beam can cause indentations due to locally increased surface pressure. In order to prevent this, we recommend additional leveling mats in the deeper areas in order to achieve the most even load distribution possible.

INFORMATION REGARDING THE USE OF VERY SMALL UNITS

For static reasons, it is necessary to connect at least two rows to the ground profile. This means that the smallest possible configuration is 1 module per row with 2 module rows.

ADVICE REGARDING THE USE ON ROOFS WITH SUBSTRATE OR GRAVEL COVERING

For roofs with substrate or gravel covering, it must be noted that a low weighting load for the system can only be achieved if the sliding of the system sections is reliably prevented by a sufficient non-slip connection to the substrate surface. For gravel roofs, in general, flush embedding of the base supports in the gravel surface is sufficient. For vegetated roofs, slip resistance can be achieved with additional precautions. For example, a non-slip connection to the substrate can be created by on-site screws in the continuous beam.

INFORMATION REGARDING ROOF EDGE DISTANCES

For the Y-Fix system, a minimum distance of 1.5 times the inclined module height must be maintained from the roof edge. This means e.g. for a horizontally arranged module with dimensions of 1.60/0.99 m, a required edge distance of 1.5×0.99 m. The necessary edge distances must also be observed for existing parapets. Additional edge distances due to shading may have to be taken into account in the planning.

The edge and corner areas of the flat roof do not match the load zones of the module field. This means that an increase of the edge distances does not lead to a release of higher ballast at the edge of the module field. This is due to wind dynamic flow behavior.



For more information, see www.ysolar.co.jp.



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