Mounting systems for solar technology

ASSEMBLY INSTRUCTIONS
D-DOME SYSTEM

GB

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PARTNER WITH A SYSTEM

With sophisticated, fully developed product ideas and obvious customer-orientation, K2 Systems is your friendly partner in the field of mounting systems for solar technology. International customers appreciate the tried and tested designs for use on roofs and in outdoor and individual solutions.

Mounting systems from K2 Systems impress with their attractive design and many well thought-out details. High grade materials and quality workmanship guarantee outstanding functionality and durability.

Our products consist of few yet perfectly matching components - this reduces the amount of material used, simplifies assembly while saving time and money.

As an energetic, experienced company, and in keeping with the times, we benefit from cooperation as partners in order to ensure the dynamic development of our company. The experiences from the personal dialogue with our customers forms the basis for permanent optimisation of our range of products.The team of K2 Systems looks forward to a successful cooperation with you.

TESTED QUALITY – FOUR CERTIFICATIONS

K2 Systems stands for secure connection, highest quality and precision. Our customers and business partners have already known that for a long time. And three independent institutes have tested, confirmed and certified our capabilities and components.

GENERAL SAFETY INSTRUCTIONS

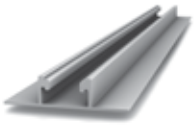
Please be aware that our General Assembly Regulations must be adhered to.
They can be viewed under **www.k2-systems.com/en/downloads/product-information.html**

In general, the following applies:

- Systems may only be installed and put into use by people who can ensure the proper carrying-out of the work due to their technical suitability (e.g. training or occupation) and/or experience.
- Before assembly, it must be checked that the product meets the local static requirements. For roof systems, the load-bearing capacity of the roof has to be checked in principle.
- National and local building regulations, standards and environmental regulations are always to be adhered to.
- Work safety and accident prevention regulations and corresponding standards and regulations of occupational associations are to be adhered to! In particular, it is to be ensured that:
  - Safety clothing is worn (especially safety helmets, work shoes and gloves).
  - For work on roofs, the regulations for working on roofs are to be adhered to (e.g. use of anti-fall guards, scaffolding with arrestor equipment from an eaves height of 3 m etc.)
  - Presence of two people is vital for the entire course of the assembly, so that swift help can be ensured in the case of an accident.
- K2 mounting systems are constantly being developed further. Because of this, assembly procedures can change. Therefore, before assembly, always check that the assembly instructions are up-to-date under **www.k2-systems.com/en/downloads/product-information.html**. We can also send you the latest version on request.
- The assembly instructions of the module manufacturer are to be adhered to.
- Earthing must be ensured, use lightning arrestor clamp if necessary.
- During the entire assembly time it is to be ensured that at least one copy of the assembly instructions is available on site.
- In the event of non-adherence to our General Safety Instructions and if competitor's parts are built in or attached, K2 Systems GmbH reserves the right to refuse liability.
- With disregarding our general installation and assembly instructions and not using all system components and assemblies according to these instructions as well when components are used, which were not obtained from us, K2 Systems is not liable for any resulting defects and damages. Warranty is excluded in such cases.
- If all safety instructions are adhered to and the system is correctly installed, there is a product warranty entitlement of 12 years! Please read out Terms and Conditions of Warranty which can be viewed under www.k2-systems.com/en/downloads/product-information.html. We can also send them to you on request.
- The dismantling of the system takes place according to the assembly steps, in reverse order.
- K2 components made of stainless steels are available in different corrosion resistance classes. In every case,the expected corrosion exposure of each structure or component must be checked.

ESSENTIAL: THE MATERIALS REQUIRED

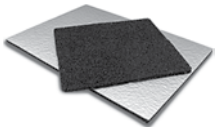
In order to assemble the K2 Systems D Dome installation system, the following listed system components are essential. The piece quantities are calculated on the basis of the respective requirements. The listed item numbers facilitate the comparison of items.



FlatRail 22; 6,10 m | 1000169

Material: Aluminium

Alternative: SpeedRail 22 2,10 m | 1003933
SpeedRail 22 4,20 m | 1003379
SpeedRail 22 6,10 m | 1001163



Building protection mat 6 mm | 1006200

Material: PUR bound rubber granules with aluminium triplex foil, laminated

Alternative: Building protection mat 6 mm | 1006199
Material: Unlaminated PUR-bonded rubber granulate

Alternative: Building protection mat 20 mm | 2000084
Dimensions: 1200x100 mm

The respective use of a laminated or unlaminated building protection mat depends on the material of the roof membrane and must thus be checked on site.

FlatConnector Set SpeedRail/FlatRail | 1006039

Material: Aluminium

K2 Dome SD | 1005842

Width: 90 mm
Material: Aluminium

K2 Dome D1000 | 1005840

Material: Aluminium, Width: 90 mm

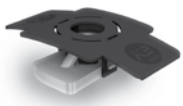
Alternative: K2 Dome D800, Width: 90 mm | 1005839

Allen Bolt DIN 912
EN ISO 4762 M8 | item number system-specific

Material: stainless steel

Washer | 1000473

Material: stainless steel



M K2 slot nut with clip | 1001643

Material: stainless steel, plastic

Module End Clamp Standard

| item number system-specific

Material: Aluminium

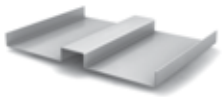
Alternative: End clamps Set Standard

Module Middle Clamp Standard

| 1005131

Material: Aluminium

Alternative: Middle clamps Set Standard



Optional: K2 Scale Dome for ballasting

| 1005838

Material: Aluminium

Optional: K2 Porter for ballasting

| 2000081

L-Profile for placing potentially required ballast
Material: Aluminium

SYSTEM VARIANT 1/4 CLAMPING UNIT FOR NON-APPROVED MODULES OR HIGHER LOAD REQUIREMENTS. ADDITIONALLY REQUIRED MATERIAL:

K2 FlexClamp

| 1005873

Two-piece clamp set for fastening the modules in the 1/4 points including M8 x 25 Allen bolt, M8x20 Allen bolt M8 x 20, M K2 and locking washers
Suitable for module frame heights of 34-50 mm.
4 sets required per module.
Material: Aluminium

Allen Bolt DIN 912 EN ISO 4762 M8

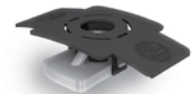
| 1000190

Material: stainless steel

Washer

| 1000473

Material: stainless steel



M K2 slot nut with clip

| 1001643

Material: stainless steel, plastic

K2 Connector

| 1005874

L-bracket for coupling of module rows
Support of ballasting potentially required
Material: Aluminium

Dome SD / Dome D1000 / Dome D800

Please note that for this assembly variant the number of Dome D1000/ Dome D800/ Dome SD pieces increases .

AT A GLANCE: OVERVIEW OF THE TOOLS

K2 Systems mounting systems are designed to ensure effortless assembly. Only the tools that are required are not included in the scope of supply. Here we have listed them together for ease of reference.

Torque wrench

With attachment for HW 6

Chalk line

Measuring tape

IN GENERAL:

- The General Installation Instructions must be adhered to.
  These can be found at: **www.k2-systems.com/en/downloads/product-information.html**
- Should you not have login details for our customer area, please contact us and we will send them to you.
- This system can be installed for all standard flat roofs with pressure-resistant substrates and a roof pitch of up to 5 degrees. The elevation angle is 10°.
- It is recommended to place a separation layer between the roofing and the rail prior to laying the FlatRail/ SpeedRail in order to protect the roofing. The rail is positioned directly on the separation layer without roof penetration. The compatibility of the building protection mat for the particular roof covering must be checked on site.
- Minimum distance to roof edge: 500 mm.
- At least 1 row of three double elevation systems (a total of 6 modules) must be installed consecutively in order to use this system.
- The K2 D-Dome D1000 or D800 System is suitable for modules with a frame height of 30 - 50 mm.
  This system is not suitable for thin-film modules.
- Modules with a length of 1.58 to 1.68 m can be used. For module widths of 950 to 1050 mm, the Dome D1000 is fitted, for module widths between 780 and 840, the Dome D800.
- After 16.0 m and up to 18.3 m rail length it is necessary to provide for a thermal separation of max.15 cm.
- For the installation of the D-Dome D1000 or D800 Systems, only standard clamps may be fitted.
  The K2 AddOn may not be used.
- It is essential to clarify, from the start, whether there is a module manufacturer's approval available for the clamping on the short side of the D-Level Dome D1000 or D800 installation systems. You can obtain the approval list from your customer consultant or at www.k2-systems.de. If no module approval is available, or if the occurring loads exceed 2750 Pa, the alternative D-Dome installation system with Flex Clamp and 1/4 clamping unit should be used!
- Because of the different orientation of the solar modules, the string and inverter connection must be appropriately observed. It is recommended that the inverters and strings are connected separately.
- If required, paving blocks can be inserted in the base plate of the Scale Dome for ballasting on the FlatRail / SpeedRail. For higher ballast we recommend using the K2 Porter.

INSTALLATION OF D-DOME SYSTEM: STEP BY STEP

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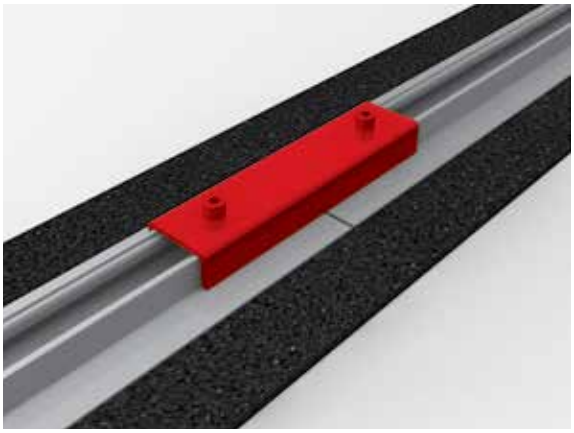
POSITION FLATRAIL

These assembly instructions only apply to flat roofs with a maximum roof pitch of 5°.
It is recommended to place a separation layer between the roofing and the rail prior to laying the flat rail in the form of a building protection mat in order to protect the roofing. The building protection mat is installed with the aluminium concealed side facing downwards. The FlatRail is positioned directly on the separation layer without roof penetration. The parallel distance between the individual FlatRails is defined by the dimensions of the modules. For a standard clamp, the recommended distance between two rails corresponds to the module length plus 20 mm.

The building protection mats must be laid at the joint with a separation of approx. 10 cm, in order to allow any accumulated water to flow off.

Materials required: FlatRail, building protection mat



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INSTALL RAIL CONNECTORS

Two FlatRails are connected at the rail joint using a rail connector. This locks the FlatRails in the longitudinal direction. Insert 2 M K2 slot nuts in the rail and turn 90° clockwise to lock. Fasten rail connectors with 2 M8 Allen bolts and one locking washer each. The connector should be between the Dome D1000 and Dome SD.

If the rail lengths permit, the rail joint can also be positioned directly below the Dome D1000 without a rail connector. However, it must be ensured that the joint is between the two fittings and under no circumstances directly at the screw position.

Torque 14 Nm

Materials required: FlatConnector Set

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FIT DOME D1000

Insert two M K2 slot nuts in the rail and turn 90° clockwise until they lock. Thereafter, position the Dome D1000 on the rail and fasten with two M8 x 20 Allen bolts and S8 locking washers.
Torque: 16 Nm

Materials required: Dome D1000, M K2, Allen bolt DIN 912 M8 x 20, S8 locking washer

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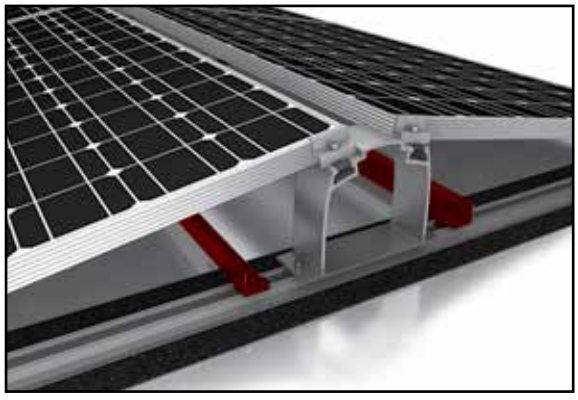
FIT DOME SD

Insert one M K2 in the rail on each side of the Dome D1000 and turn 90° clockwise until they lock. Then, position two Dome SDs on to the rail and secure tightly with an M8x20 Allen bolt and S8 locking washer.
Align both Dome SDs as per the adjacent figure.
The distance between Dome SD and Dome D1000 is approximately equal to the module width.

Materials required: Dome SD, M K2, Allen bolt DIN 912 M8 x 20, S8 locking washer



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OPTIONAL: BALLAST SYSTEM

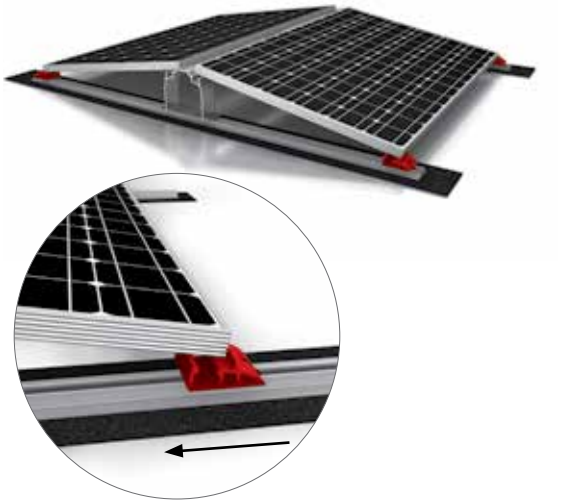
The L-Profiles are fastened to the rails with the screws, locking washers and M K2 included in the set. The spacing of the L-Profiles depends on the size of the ballast stones used.

The Porters can be positioned both centrally to the Dome 800/1000, or laterally to the middle Dome.

Each Porter set can be ballasted with up to 140 kg.

Alternatively, if only light ballasting is required, the Scale Dome can be used (see step 7)

Materials required: K2 Porter, M K2, Allen bolt DIN 912 M8 x 20



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POSITION MODULES AND DOME SD SCREW IN

The modules are laid horizontally, in the centre of two Dome D1000s. The specially affixed bars serve as the stop. Thereafter, the module is positioned on two Dome SDs. The lightly secured Dome SDs are pushed to the stop in direction of the module and screwed in.
Torque: 16 Nm.

Attention:
Only modules approved for clamping may be used on the short side, see point „GENERAL RULES“ on page 8 and the note on page 12. Please take care not to cover any drainage holes in modules, as otherwise potential condensation cannot run off.

Materials required: Module

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FASTEN MODULE

First, insert the M K2 slot nut into the nut of the Dome SD and the Dome D1000 and turn 90° clockwise.

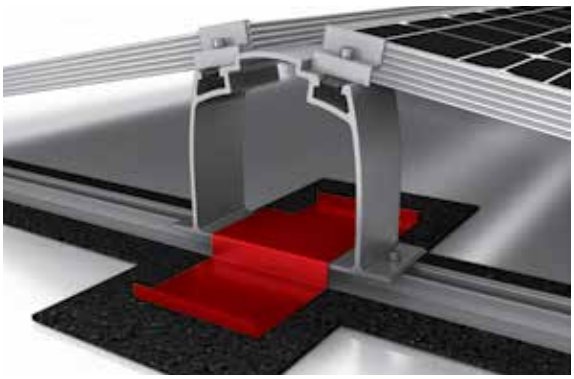
Screw the modules at the end of each row with end clamps, DIN 912 M8 screws and S8 locking washers into the slot nuts. If the end and mid clamp set is supplied, fasten the entire set in the groove.

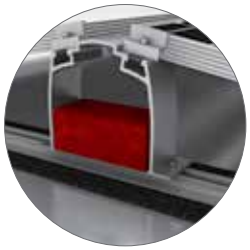
Use two standard middle clamps each between two modules which are also fastened with DIN 912 M8 screws and S8 locking washers in the slot nuts.

Alternatively, XS mid clamps can be used.
However, longer screws must be used in this case.

Torque: 14 Nm.

Materials required: End/ mid clamp, M K2, DIN 912 M8 Allen bolt, S8 locking washer





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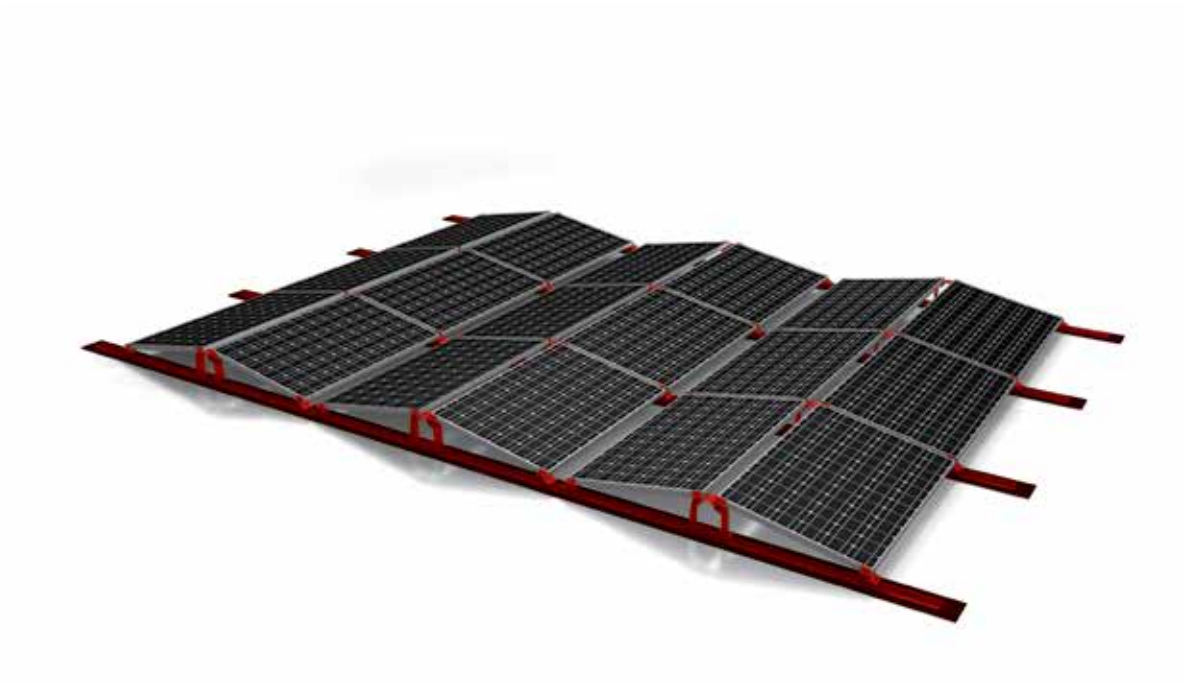
BALLAST THE SYSTEM

For some roof areas the system might need to be additionally ballasted against any wind suction that may occur. To do this, simply insert the Scale Dome into the hollow chamber of the Dome D1000. The roof covering beneath the Scale should be protected with additional building protection mats.
Depending on requirements, up to 5 ballast stones (dimensions LxWxH 200 x 100 x 800 mm) can be fitted according to the adjacent illustration.
If heavier ballasting is required, additional Scale Domes including stones must be added to the side of the Dome D1000 for ballast.

If only light ballasting is required, a single ballast stone can be inserted directly into the hollow chamber of the Dome D1000.

Materials required: Scale Dome, stones for ballasting, building protection mat



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OVERALL SYSTEM, CORNER CLAMPING

Due to the double-sided orientation of the modules and the elevation angle of 10°, the rows can generally be installed next to each other without shading clearance. However, we recommend that for potential maintenance work a foot-wide gap is left between the modules.

ALTERNATIVE SYSTEM VARIANT: DOME D800

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of 1

POSITION FLATRAIL

For module widths between 798 and 819 mm, the Dome D1000 is replaced by the Dome D800. The installation itself is the same, only the distance between the Domes is different.

Attention:
If no module manufacturer's approval is available for clamping on the short side of the module, or if the occurring loads exceed 2750 Pa, then the alternative installation system D-Dome with Flex Clamp and 1/4 clamping unit must be used! Please take care not to cover any drainage holes in modules, as otherwise potential condensation cannot run off.

ALTERNATIVE SYSTEM VARIANT: 1/4 CLAMPING UNIT

THE FOLLOWING ALSO APPLIES:

- The system is approved for snow loads of up to 4 kN/m² and wind loads of up to 1.3 kN/m².
- The K2 D-Dome D1000 or D800 System is suitable for modules with a frame height of 34 - 50 mm. In general, thin-film modules may not be used with this system.
- For the installation of the D-Dome D1000 or D800 Systems, only the additional clamp sets may be fitted. The K2 AddOn may not be used.
- If required, paving blocks can be inserted in L-bracket for ballasting.

STEPS 1-4 SEE PAGE 9 AND 10

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PRE-MOUNT CLAMP SETS ON DOMES.

The parallel distance between the individual flat rails is defined by the dimensions of the modules and their clamping area. For a standard module, the recommended distance between the FlatRails corresponds to half of the module length. In individual cases, the module installation instructions for the clamp area must be adhered to.

Insert the pre-mounted FlexClamp Set into the nuts of the domes and secure by tightening the screw.

Torque: 14 Nm

Materials required: Dome1000, Dome SD, M K2, FlexClamp Set including DIN 912 M8x20 Allen bolt, S8 locking washer

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POSITION MODULE AND DOME SD SCREW IN

The modules are laid horizontally, in the centre of two D1000 domes. Thereafter, the module is positioned on two Dome SDs. The top part of the FlexClamp has to be lifted then the module frame is inserted between the top and bottom part of the FlexClamp. The lightly fastened Dome SDs are pushed to the stop of the FlexClamp Set in direction of the module and screwed in.

Torque: 16 Nm.
Materials required: Module

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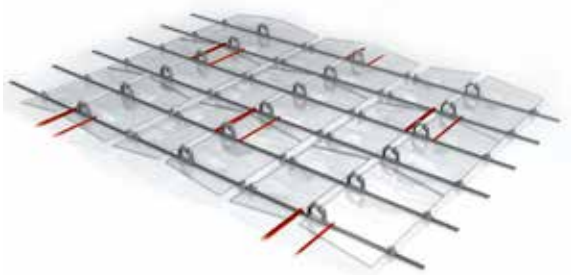
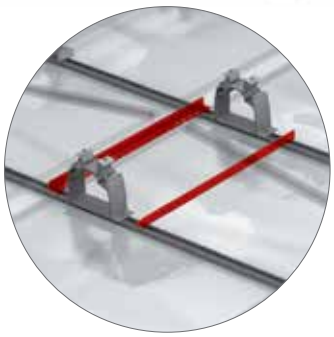
FASTEN MODULE

The upper part of the FlexClamp Set is screwed to the middle piece with the supplied screws and washers.

Torque: 14 Nm.

Materials required: FlexClamp Set including M8 x 25 Allen bolt and S8 locking washer





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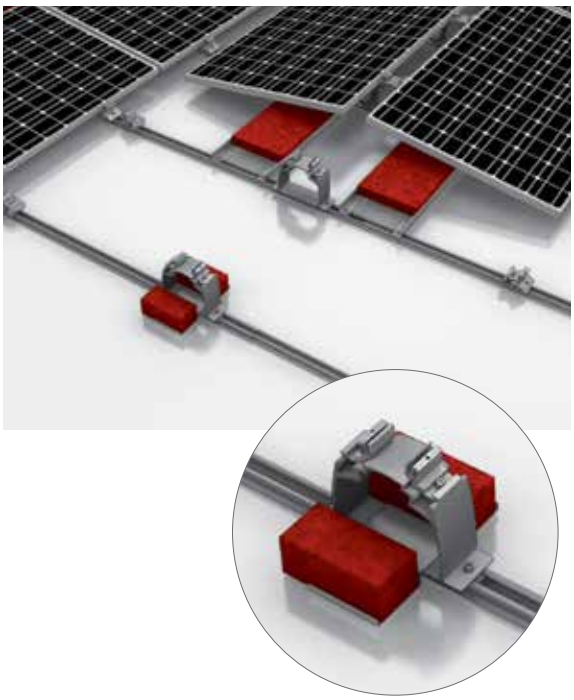
COUPLING OF ROWS

As the rows are not coupled to each other as is the case with the D-Dome System, this must be performed separately. For this, the L-bracket can be screwed directly on to the flat rail or together with the Dome D1000/800.

A minimum of 3 rows per double elevation systems must be coupled.

The number and exact position of the coupling angle depends on the wind loads at the location and the required ballasting and must be planned according to the individual system.



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BALLASTING THE SYSTEM

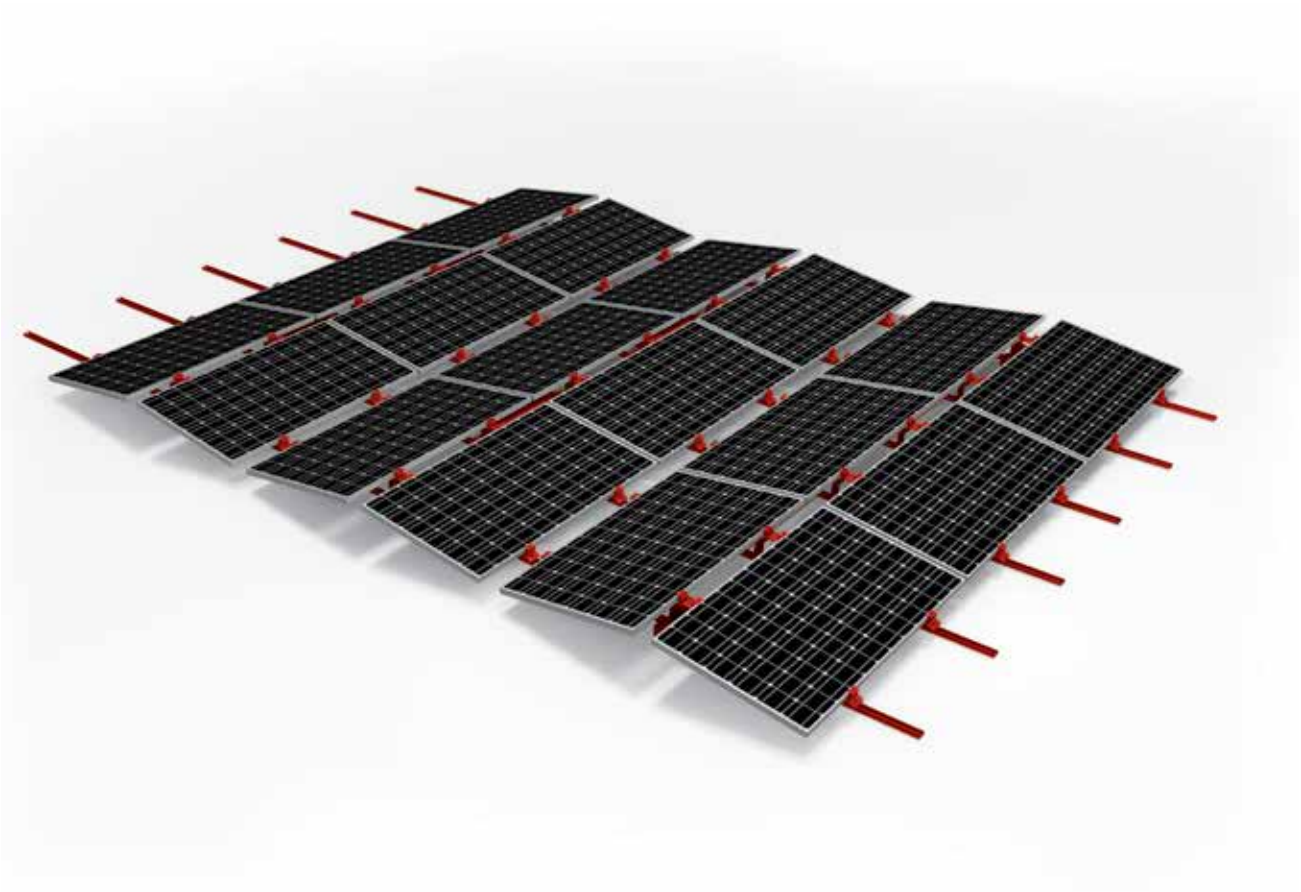
For some roof areas the system might need to be additionally ballasted against the wind suction loads that may occur.

Coupling angles can be used for the additional ballasting. If ballasting is required in the edge area, then the Scale Dome can be used in the same way as for the Dome corner clamping.

SYSTEM VARIANT DOME D800 WITH ADDITIONAL CLAMPS

1d of 1

For module widths between 798 and 819 mm, the Dome D1000 is replaced with the Dome D800. The installation itself is the same, only the distance between the Domes is different.



Ready!

THANK YOU FOR CHOOSING A K2 MOUNTING SYSTEM.

Systems from K2 Systems are fast and simple to install. We hope these instructions have helped you in this. Please contact us if you have any questions or suggestions for improvements.
We are looking forward to receive your call on our

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Mounting systems for solar technology

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