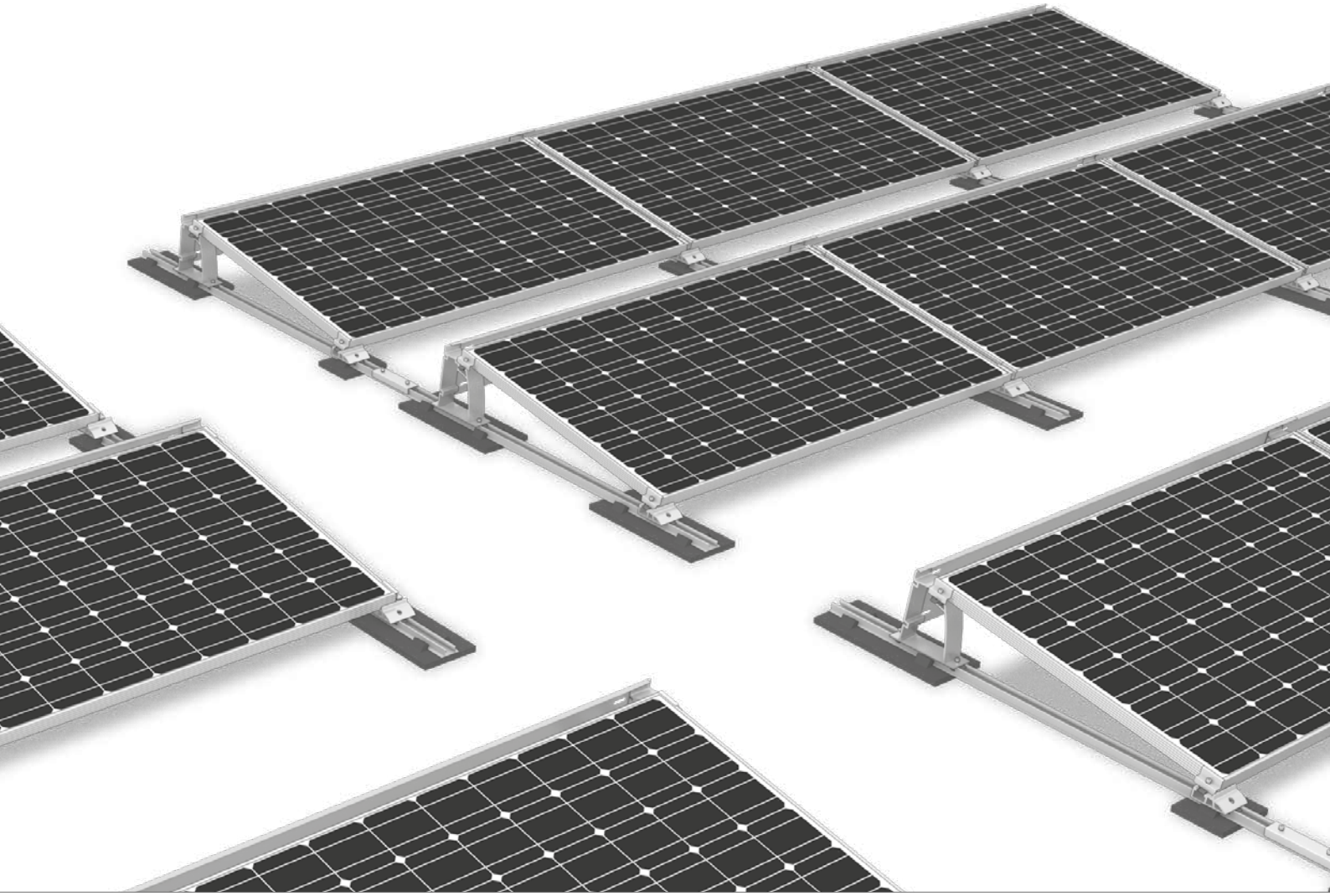
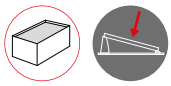
Mounting systems for solar technology



ASSEMBLY INSTRUCTIONS

S-Dome System



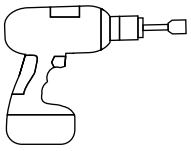
Content

QUALITY TESTED – SEVERAL CERTIFICATIONS

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

Please find our quality and product certificates under:
www.k2-systems.com/en/technical-information

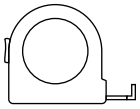
Tools overview



6 mm

6 - 30 Nm
(4,5 - 22,2 lb-ft)

6 mm



≥ 3,0 m

≥ 6,0 m

General safety information

Please note that our general mounting instructions must be followed at all times and can be viewed online at www.k2-systems.com/en/technical-information

- The equipment may only be installed and operated by qualified and adequately trained installers.

- Prior to installation, ensure that the product complies with on-site static loading requirements. For roof-mounted systems, the roof load-bearing capacity must always be checked.

- National and local building regulations and environmental requirements must be adhered to.

- Compliance with health and safety regulations, accident prevention guidelines and applicable standards is required.
  · Protective equipment such as safety helmet, boots and gloves must be worn.
  · Roofing works must be in accordance with roofing regulations utilising fall protection safeguards when eaves height exceeds 3 m.
  · At least two people must be present for the duration of the installation work in order to provide rapid assistance in the event of an emergency.

- K2 mounting systems are continuously developed and improved and the installation process may thereby change at any time. Prior to installation consult our website at www.k2-systems.com/en/technical-information for up-to-date instructions. We can send you the latest version on request.

- The assembly instructions of the module manufacturer must be adhered to.

- Equipotential bonding/grounding/earthing between individual parts is to be performed according to country specific standards, as well as national laws and regulations.

- At least one copy of the assembly instructions should be available on site throughout the duration of the installation.

- Failure to adhere to our general safety and assembly instructions and not using all system components, K2 is not liable for any resulting defects or damages. We do not accept liability for any damage resulting in the use of competitor's parts. Warranty is excluded in such cases.

- German law shall apply excluding the UN Convention on CISG. Place of venue is Stuttgart. Our General Terms of Business apply.

- If all safety instructions are adhered to and the system is correctly installed, there is a product warranty entitlement of 12 years! We strongly recommend reviewing our terms of guarantee, which can be viewed at www.k2-systems.com/en/technical-information
  We will also send this information on request.

- Dismantling of the system is performed in reverse order to the assembly.

- K2 stainless steel components are available in different corrosion resistance classes. Each structure or component must be carefully checked for possible corrosion exposure.

The following guidelines apply

The S-Dome System can be installed under the following conditions. Please clarify in advance whether the manufacturer authorises clamping on the short side. For the module list, please contact your account manager or www.k2-systems.com.

ROOF REQUIREMENTS

- This system can be used on all established flat roof constructions with a pressure resistant substrate and a roof pitch of up to 5°. From a roof pitch of 3.1°, the system must be fixed mechanically. See installation instructions for roof anchors.
- The roof surface must be clean and dry. Roof irregularities must be corrected or removed where appropriate.
- The coefficient of friction of the roof must be determined on-site.
  See video https://youtu.be/os-Cedx_QEk

STATIC REQUIREMENTS

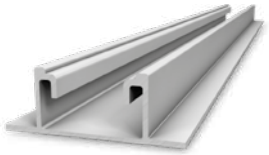
- Sufficient roof structure load-bearing capacity, as well as insulation pressure capacity
- For framed modules with a frame height of 30 - 50 mm
- Permissible module dimensions: length 1386 - 2067 mm, width 950 - 1100 mm

IMPORTANT MOUNTING INSTRUCTIONS

- On-site general standards and regulations for lightning protection must be observed and consultation with a specialist to create a lightning protection concept is recommended (use lightning protection clamp if necessary).
- External influences that act on this system are only reflected in the design of the ballast to a limited degree. For instance, unevenness, thermal elongation, moss, water accumulation and ageing of the sheeting cannot be considered, although these factors might also precipitate system displacement under certain circumstances. We recommend you check whether the system requires additional mechanical attachment, as the impact of these influences may be greater on slanted roofs.
- The inclination of the Dome system is 10°.
- A minimum distance to the roof edge of 600 mm must be observed.
- At least two modules must be assembled discontiguous to use this mounting system.
- Ensure a thermal separation (distance between module blocks) after a maximum of 12 m in the module row direction and in the direction of the base rail. Note: For separation distances > 500 mm, additional ballast required.
- Tightening torque of 14 Nm for all module clamps.
- In the event of exceptional circumstances (such as storms, heavy rain, earthquakes, etc.), the system should be checked by a specialist. Should an inspection find damage or plastic deformation (such as in the module clamp area) the components must be replaced.
- Adhere to module manufacturer recommendations for clamping area and module installation (see module manufacturer instructions). Check whether manufacturer approval is available for corner clamping.
- Compatibility of building protection mats with roof covering must be checked.
- It is important to ensure that the rain water flow is not hindered.

Required Materials

In order to assemble the K2 Systems S-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.



Mounting Rail K2 SpeedRail 22, 6,10 m | 1001163

Material: aluminium EN AW-6063 T66

K2 FlatConnector Set | 1006039

The set consists of:
- 1 FlatConnector, aluminium
- 2 Bolts with serrated under head M8x20, stainless steel
- 2 M K2 slot nut with clip, stainless steel

K2 Dome S1000 2.0 | 2001967

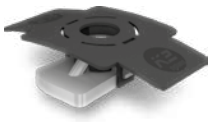
Wide: 65 mm
Material: aluminium EN AW-6063 T66

K2 Dome SD 2.0 | 2001968

Wide: 65 mm
Material: aluminium EN AW-6063 T66

K2 Bolts with serrated under head | 2001729

according to M8x20 DIN 912/EN ISO 4762
Material: stainless steel A2, WS 6 mm

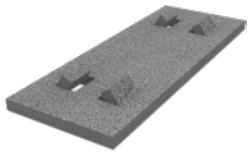


M K2 Slot nut with clip | 1001643

Material: stainless steel und PA

K2 Solar Cable Manager | 2002870

Accessory for module cable mounting

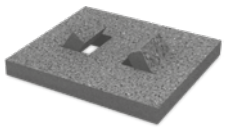


K2 Building protection mat Dome | 2001696

470x180x18 mm
Material: Unlaminated PUR-bonded rubber granulate

Alternatively: K2 Building protection mat Dome alu | 2001695
470x180x18 mm
Material: PUR-bound rubber granules with aluminium triplex foil, laminated

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

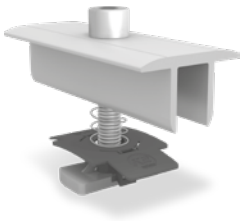


K2 Building protection mat Dome SD | 2001740

160x180x18 mm
Material: Unlaminated PUR-bonded rubber granulate

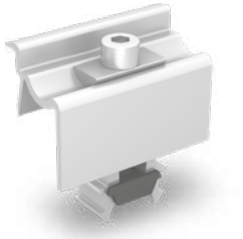
Alternatively: K2 Building protection mat Dome SD alu | 2001739
160x180x18 mm
Material: PUR-bound rubber granules with aluminium triplex foil, laminated

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



K2 Module middle clamp XS Set | item number system-specific

The Set consists of:
- 1 Middle clamp XS, aluminium mill finish/ black
- 1 Allen bolt M8, stainless steel A2
- 1 MK2 solt nut with clip, stainless steel and PA
- 1 Securing washer S8, stainless steel A2



K2 Universal module clamps OneEnd | 2002514

Module frame height: 32-42 mm

Alternatively: K2 Module End Clamp Standard Set | item number system-specific

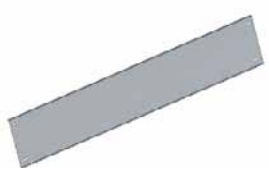
Required Materials

K2 Washer 8,4x30x1,5 mm | 1000273

Material: stainless steel A2

K2 Bolts with serrated under head | 2001735

according to M8x16 DIN 912/EN ISO 4762
Material: stainless steel A2, WS 6 mm



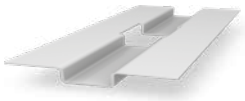
K2 Windbreaker

K2 Windbreaker Dome S1000 1600 mm | 2001119
For module length between 1550 and 1600 mm
Length: 1600 mm
Material: aluminium

K2 Windbreaker Dome S1000 1700 mm | 1005843
For module length between 1601 and 1700 mm
Length: 1700 mm
Material: aluminium

K2 Windbreaker Dome S1000 2000 mm | 2002732
For module length between 1890 and 2080 mm
Length: 2080 mm
Material: aluminium

OPTIONAL COMPONENTS FOR BALLASTING:



K2 SpeedPorter | 2002300

Ballast support for slabs and stiffening
Material: aluminium EN AW-6063 T66

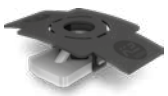
K2 Dome Porter 1750 mm | 2000081

Ballast support for slabs
Pair of L-Profiles to carry required ballast as concrete slabs or similar
Material: aluminium

Alternatively: K2 Dome Porter 2050 mm | 2001140

K2 Bolts with serrated under head | 2001729

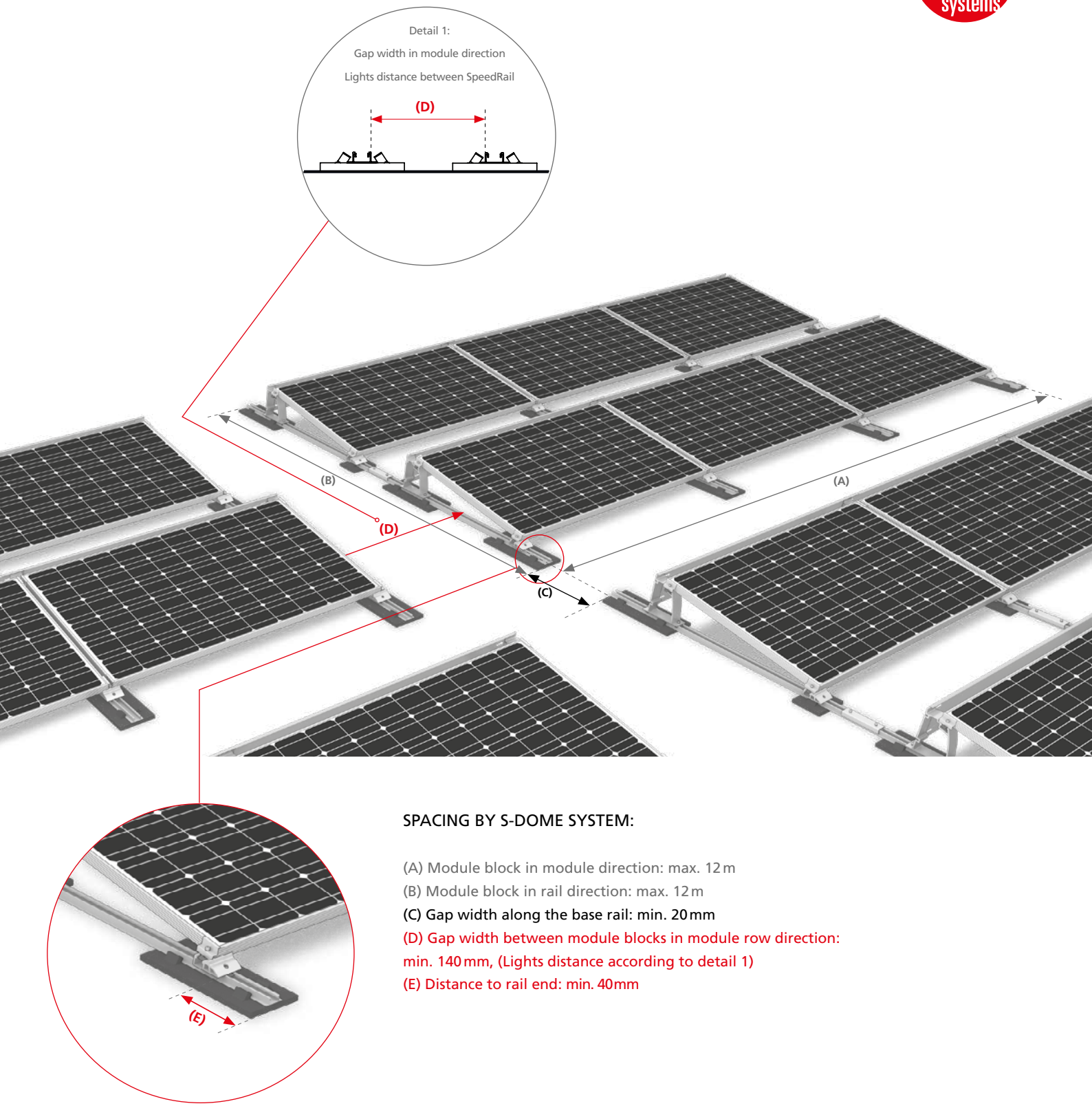
M8x20 according to DIN 912/ EN ISO 4762
Material: stainless steel A2, WS 6 mm



MK2 Slot nut with clip | 1001643

Material: stainless steel A2 and PA

Assembly

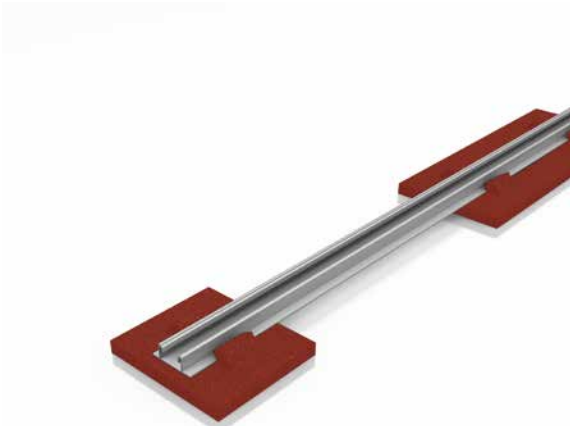


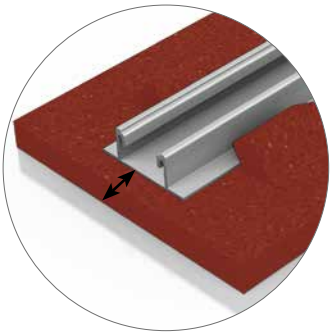
SPACING BY S-DOME SYSTEM:

(A) Module block in module direction: max. 12 m
(B) Module block in rail direction: max. 12 m
(C) Gap width along the base rail: min. 20 mm
(D) Gap width between module blocks in module row direction: min. 140 mm, (Lights distance according to detail 1)
(E) Distance to rail end: min. 40 mm

Assembly

1 Position SpeedRail





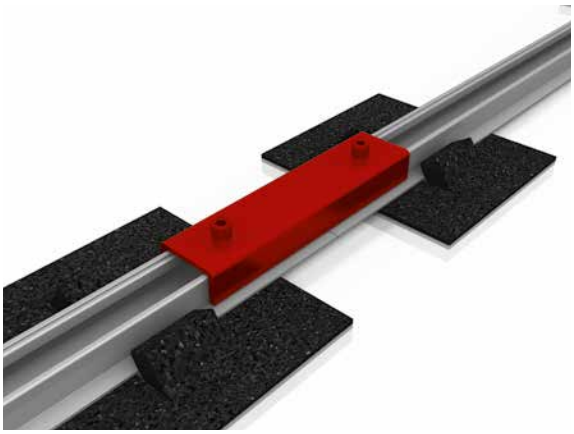
Prior to placing the SpeedRail as a base rail, insert a protection layer between the roof covering and the rail in order to avoid any damages to the roof covering. With membrane roofs the Aluminium-coated side shall face downwards. Place the Speedrail onto the protection layer without penetrating the roof. The protection must have to be placed under the load bearing components Dome S1000 and Dome SD.

Position the protection mats and base rail according the requirements of the array. The spacing between the mats/base rails is determined by the module dimensions (module length + 13 mm). ‚Connect' the K2SpeedRails to the protection mats via the pre-cut WINGS.

The rail ends of the K2SpeedRails must not protrude the protection mats.

Materials required: K2 SpeedRail, building protection mat Dome and Dome SD

2 Mount the FlatConnector



Two SpeedRails are connected at the rail joint using a rail connector. This locks the SpeedRails in the longitudinal direction. Insert 2 MK2 slot nuts in the rail and turn 90° clockwise to lock. Fasten rail connectors with two Bolts with serrated under head M8.

If the rail lengths permit, the rail joint can also be positioned directly below the Dome S1000 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

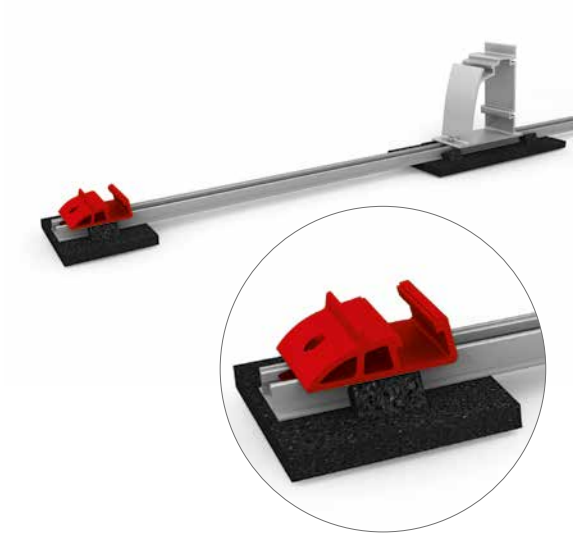
3 Fit Dome S1000

Insert two MK2 slot nuts in the rail and turn 90° clockwise until they lock. Thereafter, position the Dome S1000 on the rail. Position the protection mat Dome that two WINGS are under the Dome S1000. Only then fasten the Dome S1000 with two bolts M8x20.

Torque: 16 Nm

Materials required: Dome S1000, MK2, Allen bolt M8x20, protection mat Dome

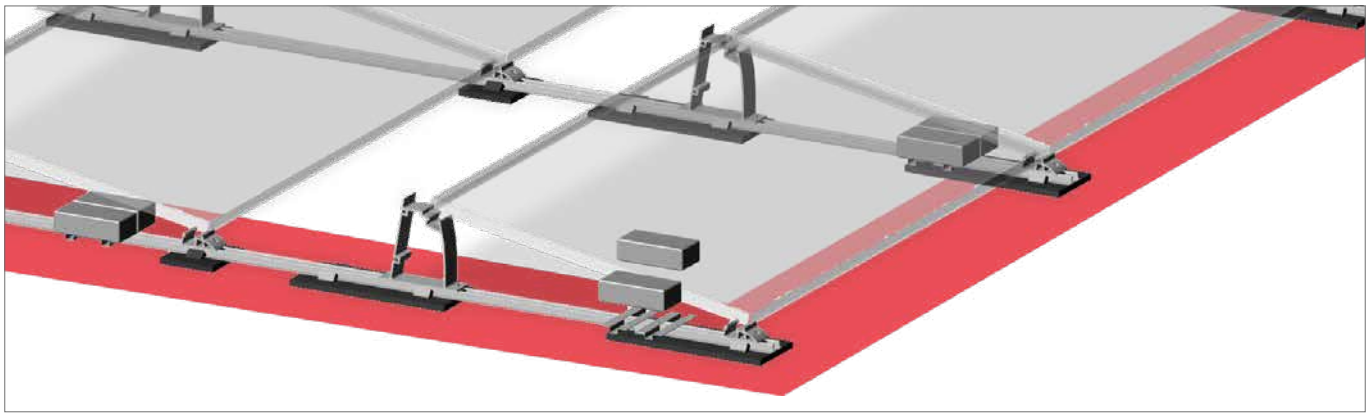
4 Fit Dome SD



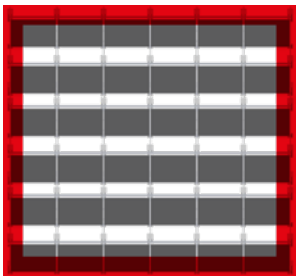
Insert one MK2 slot nut in the rail and turn 90° clockwise until it locks. Place the Dome SD onto the rail and align as per the adjacent figure. The distance between Dome SD and Dome S1000 is approximately equal to the module width. Before fastening ensure care should be taken that the protection mat SD and its WINGS are under the Dome SD and the rails at the array edges do not protrude. Finally the Dome SD is loosely fastened with a Allen bolt M8x20.

Materials required: Dome SD, MK2, Alle bolt M8x20,building protection mat Dome SD

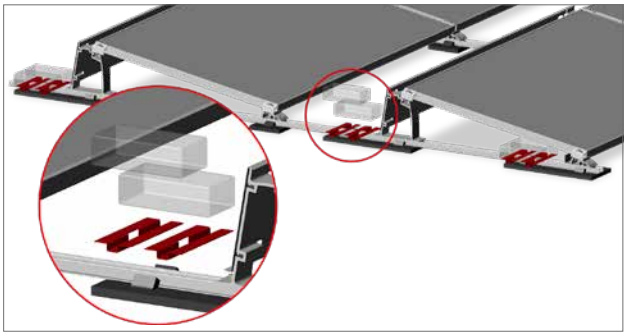
5 Ballasting the system



At the module field edges the specified ballst under the module must be placed as near as possible to the SD Dome.
The correct ballast specifications are calculated automatically by K2 Base On and are provided in the ballast plan.

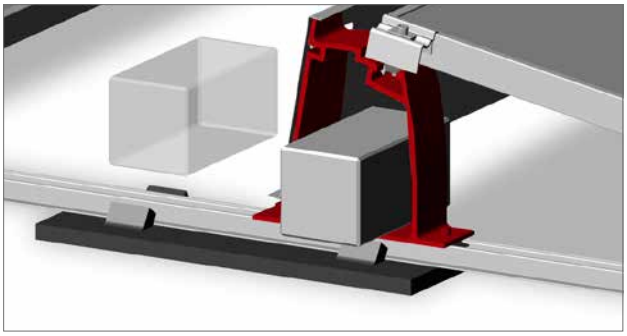


Module field edges



K2 SpeedPorter Installation:

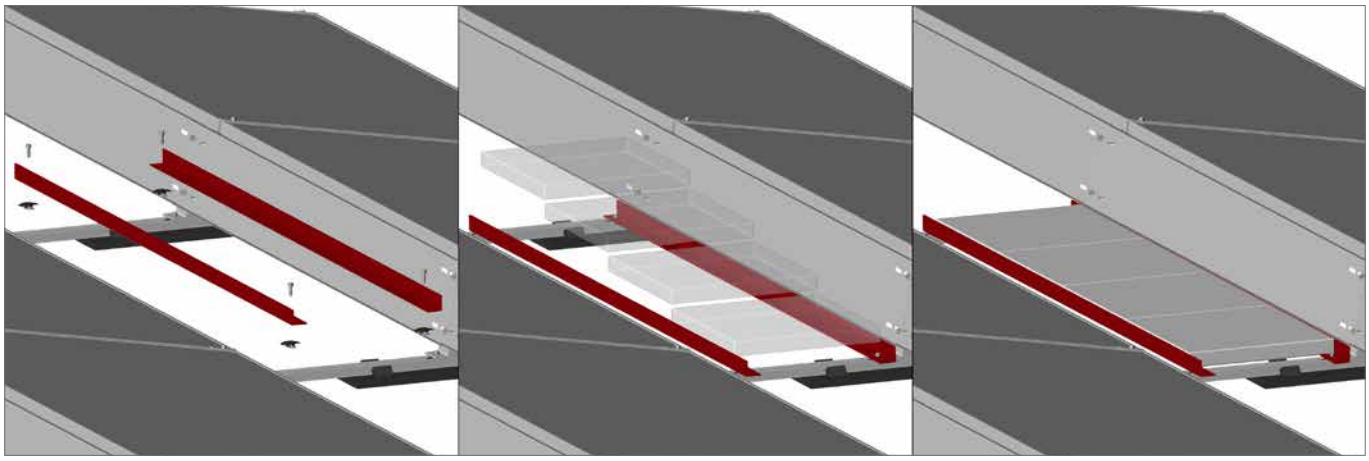
Depending on ballast size, position each SpeedPorter with the appropriate distance and insert the ballast.

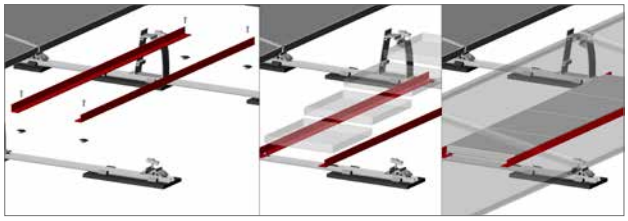


Ballasting without additional items in mid of module field:

If only light ballasting up to 5 kg is required, insert one brick directly into the hollow chamber of the Dome S1000.

Ballasting with K2 Porter for higher ballasting:





Fix Porters (L-brackets) in place on the parallel SpeedRails with MK 2 slot nuts and cylinder head screws (allen bolts).

The distance between the Porters depends on the size of the ballast bricks chosen.
See page 14.
Tightening torque: 16 Nm

5 Ballasting the system

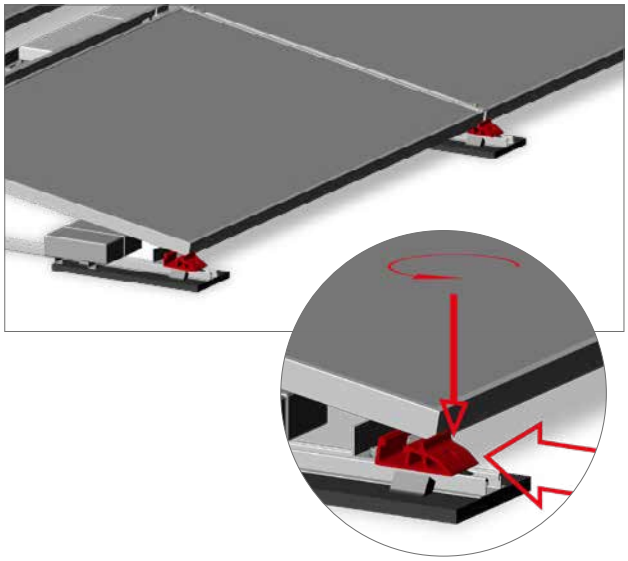
Ballast weight table				
Ballast weight in kg (Limit value in K2 Base)	**Recommended additional items**	**Recommended brick dimensions in cm**	**Max. no. of bricks**	**Installation recommendations**
Up to approx. 5 kg in the centre of installation	No additional articles required	20x10x8 20x20x10 20x20x6	2 1 2	2 bricks in the cavity of the Dome S1000 1 bricks in the cavity of the Dome S1000 2 bricks in the cavity of the Dome S1000
min. 3 kg at system edges from approx. 5 kg in centres of installation	SpeedPorter Set one side of the dome	40x40x4 30x30x5	2 3	Where necessary, an additional 2 bricks 20x10x8 in Dome S1000
From approx. 40 kg	K2 Porter	40x40x4 30x30x5 50x50x4	2 2 2	
Approx. 40 kg to approx. 80 kg	SpeedPorter Set both sides of the dome	40x40x4 30x30x5	2 3	Where necessary, an additional 2 bricks 20x10x8 in Dome S1000

Warning: Pay attention to module inclination when using Porter!
For ballast weights exceeding 100 kg, please consult a K2 technician.
We are happy to assist you with selecting the optimal ballast components once you the ballast size is determined.

Table for bricks and slabs *		
Type	**Weight in kg**	**Dimensions (LxBxH) in cm**
Paving bricks	2,2 3,5 4,5 5,4 7,2	10x10x10 20x10x8 20x10x10 20x20x6 20x20x8
Flagstones (slabs)	14 19 22	40x40x4 40x40x5 50x50x4

* recommended values

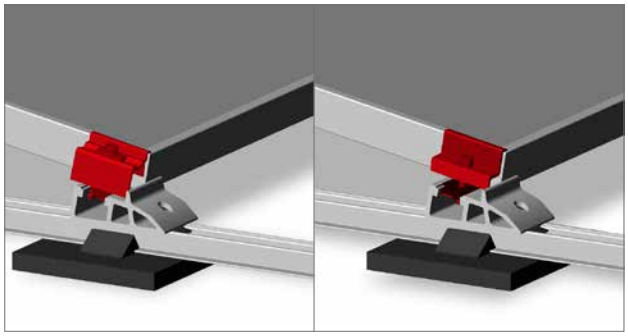
6 Position module and fasten Dome SD



The modules are laid horizontally, in the centre of two Dome S1000. The specially affixed bars serve as the stop. Thereafter, the module is positioned on two Dome SDs. The only loosely fastened Dome SD together with the protection mat SD 160 × 180 × 18 mm are pushed towards and against the module and then fastened. Before fastening ensure that the WINGS of the protection mat are under the Dome SD and the rails at the array edges do not protrude.
Tightening torque: 16 Nm.

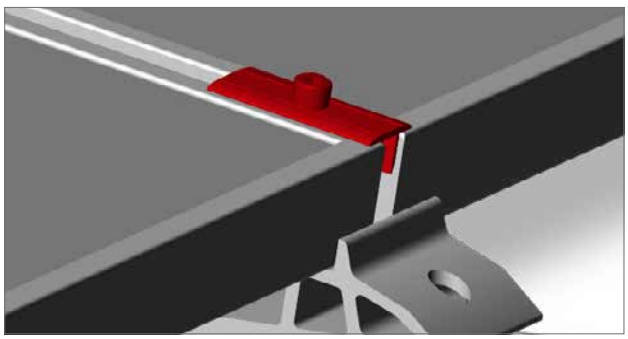
Attention: Only modules approved for corner clamping may be used, see point „GENERAL SAFETY INFORMATION“ on page 5. Please take care not to cover any drainage holes in modules, otherwise potential condensation cannot run off.

7 Fasten Module



Fix the module in place at the end of a row with universal module end clamp OneEnd. Klick the Stance in the notches. Place clamps on the module frames and fix them.

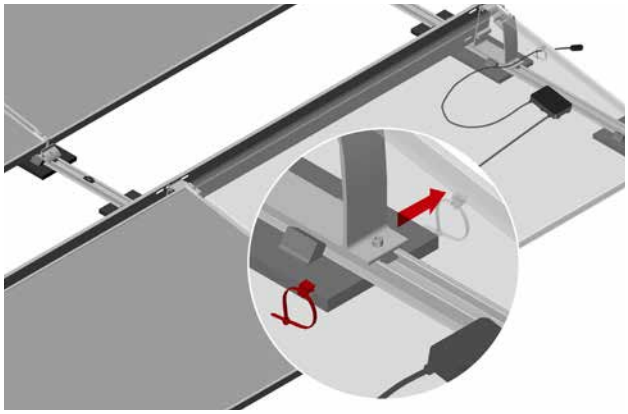
Alternatively, use the standard end clamp sets. Insert the M K2 nut into the slot of the Dome SD and the Dome S1000 and turn clockwise by 90 °. Place clamps on the module frames and fix them.



Between every two modules, use two XS middle clamp sets. Insert clamp sets in the S1000 and SD notches and rotate 90°. Place the clamps onto the module frame and fix them in place.

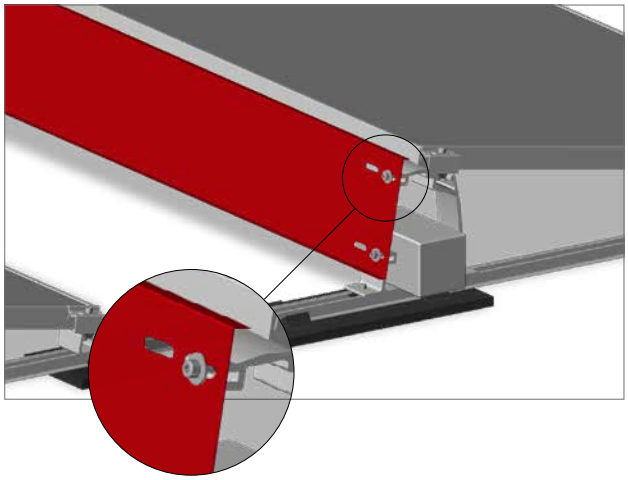
Tightening torque: 14 Nm

8 Fix Cable Manager



Bend the K2 Solar Cable Manager to a circle and plug it into the module frame backside. Then insert the cables through the cable tie.

9 Install the windbreaker

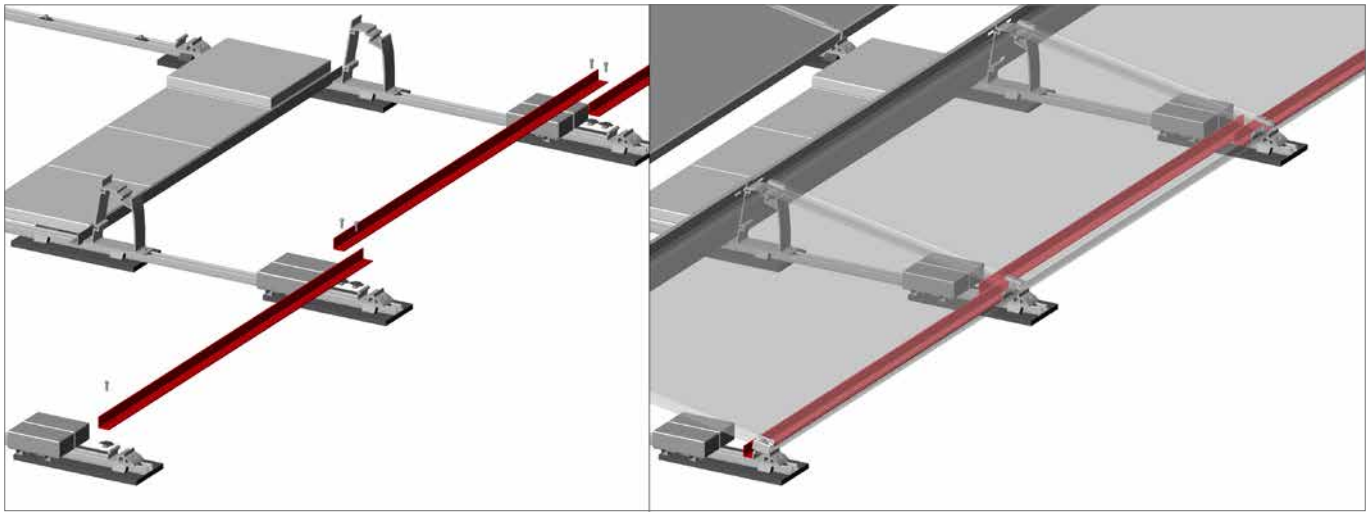


Use a ballast with the Dome S1000 where necessary. See page (see page 14) and fix module cable in place.

Align upper beading of the wind breaker with the ridge of the Dome S1000 (Surface with foil faces outwards.) Align wind breaker at the module edge and fix in place via slotted holes with M8×16 Allen bolts and washers in screw channel. Remove protective film. Tightening torque: 16 Nm

If two wind breakers overlap, align them so that a screw (including washer) can be bolted through the slotted hole!

Ensure the wind breaker does not protrude beyond the end of the row!



K2 Porter for bracing can be used for the purpose of ballast reduction in the corner areas. These must always be positioned on the three outer modules according to the technical design.

Notes

THANK YOU FOR CHOOSING A K2 MOUNTING SYSTEM.

Systems from K2 Systems are quick and easy to install. We hope these instructions have helped. Please contact us with any questions or suggestions for improvement.
Our contact data:

- **www.k2-systems.com/en/contact**
- **Service Hotline: +49 (0)7159 42059-0**

German law shall apply excluding the UN Convention on CISG.
Place of venue is Stuttgart.

Our General Terms of Business apply. Please refer:
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