Mounting systems for solar technology

ASSEMBLY INSTRUCTIONS
DOME ON TRAPEZOIDAL

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 – MULTIPLE CERTIFICATIONS

K2 Systems stands for secure connection, highest quality and precision. Our customers and business partners have already known that for a long time. 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 http://www.k2-systems.uk.com/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 3m 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 http://www.k2-systems.uk.com/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 http://www.k2-systems.uk.com/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

All system components listed in the following are essential for assembling the K2 Systems Dome system for Trapezoidal sheet. The item quantities are calculated on the basis of the respective requirements. The listed item numbers facilitate the comparison of items.

### Mounting Rail K2 SpeedRail 22
- Material: aluminium EN AW-6063 T66
- Article number: system-specific
- 1005193

Alternatively: Mounting Rail K2 SpeedRail 36
- Article number: system-specific
- 1001164

### K2 SpeedClip
- Material: glass fibre reinforced PA, EPDM
- Article number: 1001164

### K2 Self-tapping screw 6x36 mm
- Material: stainless steel, EPDM, WS 8 mm
- Article number: 1001622

Alternatively: K2 Self-tapping moulded screw 6x38 mm
- Article number: 1005193

### M K2 Slot nut with clip
- Material: stainless steel, PA
- Article number: 1001643

Alternatively, also slot nut made of aluminium can be used.

### K2 SpeedConnector Set
- Article number: 1003571
- The set consists of:
  - SpeedConnector, aluminium
  - Countersunk drilling screws 4.8x16 mm (1003083), bit TX 25, stainless steel

For SpeedRail 22: 1003558
For SpeedRail 36: 1003560

### K2 SpeedLock Set
- Article number: For SpeedRail 22: 1003558
- For SpeedRail 36: 1003560
- The set consists of:
  - 1 SpeedLock, aluminium
  - 1 Hexagon socket countersunk head screw M8x20 DIN 7991, stainless steel
  - 1 M K2 Slot nut with clip (1001643), stainless steel and PA
K2 Module End Clamp Standard Set

The set consists of:
¬ 1 Module End Clamp Standard, Aluminium plate finished/ black anodized
¬ 1 Allen bolt M8, WS 6 mm, stainless steel A2
¬ 1 M K2 Slot nut with clip (1001643), stainless steel and PA
¬ 1 Lock washer S8 (1000473), stainless steel A2
¬ 1 spring, stainless steel

K2 Module Middle Clamp Standard Set

The set consists of:
¬ 1 Module Middle Clamp, Aluminium plate finished/ black anodized
¬ 1 Allen bolt M8, WS 6 mm, stainless steel A2
¬ 1 M K2 Slot nut with clip (1001643), stainless steel and PA
¬ 1 Lock washer S8 (1000473), stainless steel A2
¬ 1 spring, stainless steel

Alternatively: K2 Module Middle Clamp XS Set

K2 Allen bolt

M8 DIN EN ISO 4762
Material: stainless steel A2, WS 6 mm

K2 Lock washer

DIN EN 10151
Material: stainless steel A2

K2 Dome SD

Width: 90 mm
Material: aluminium EN AW-6063 T66

K2 Dome S1000

Width: 90 mm
Material: aluminium EN AW-6063 T66

K2 Washer 8,4x30x1,5 mm

Material: stainless steel A2
K2 Windbreaker Dome S1000
For module length 1601-1700 mm
Length: 1700 mm
Material: aluminium
Alternatively: K2 Windbreaker Dome S1000 1600 mm
For module length 1550-1600 mm
Length: 1600 mm
Material: aluminium

K2 Allen bolt
M8x16 DIN EN ISO 4762
Material: stainless steel A2, WS 6 mm
AS AN ALTERNATIVE OPTION TO THE K2 S-DOME COMPONENTS OUR K2 D-DOME COMPONENTS CAN BE USED FOR AN EAST-WEST ORIENTATION OF THE MODULES.

<table>
<thead>
<tr>
<th>K2 Dome SD</th>
<th>1005842</th>
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<tbody>
<tr>
<td>Width: 90 mm</td>
<td></td>
</tr>
<tr>
<td>Material: aluminium EN AW-6063 T66</td>
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<table>
<thead>
<tr>
<th>K2 Dome D1000</th>
<th>1005840</th>
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<tbody>
<tr>
<td>Width: 90 mm</td>
<td></td>
</tr>
<tr>
<td>Material: aluminium EN AW-6063 T66</td>
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</tbody>
</table>

Alternatively: K2 Dome D800 | 1005839 |

<table>
<thead>
<tr>
<th>K2 Allen bolt</th>
<th>Artikel-Nummer anlagenspezifisch</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8 DIN EN ISO 4762</td>
<td></td>
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<tr>
<td>Material: stainless steel A2, WS 6 mm</td>
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<table>
<thead>
<tr>
<th>K2 Lock washer</th>
<th>1000473</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN EN 10151</td>
<td></td>
</tr>
<tr>
<td>Material: stainless steel A2</td>
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<table>
<thead>
<tr>
<th>M K2 Slot nut with clip</th>
<th>1001643</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material: stainless steel, PA</td>
<td></td>
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Alternatively, also slot nut made of aluminium can be used.
AT A GLANCE: OVERVIEW OF THE TOOLS

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

Cordless screwdriver
With mount for WS 8 mm and TX 25
(WS= wrench size)
(TX=Torx)

Torque wrench
WS 6 mm
(WS= wrench size)

Measuring tape

Chalk line
IN GENERAL:

In order to ensure safe and correct assembly of the system, please first read through all of the steps. For each step, the materials required are listed.

¬ The grounding must be prepared on site and carried out in accordance with the respective national regulations.

¬ The General installation instructions must be adhered to.
   You will find these instructions under:
   http://www.k2-systems.uk.com/downloads/product-information.html

¬ If the troughed sheet is fastened with calottes, please never fix the SpeedClips to the calottes! Instead, mount all SpeedClips staggered in sequence into the troughed sheet.

¬ The modules may never be fixed over the thermal expansion joint.

¬ This system can be installed on all trapezoidal roofs with a roof pitch of up to 5 degrees. The elevation angle is 10°.

¬ Minimum distance to roof edge: 500 mm.

¬ The module distance according to the planning specifications of K2 Systems must be adhered to.

¬ The K2 S Dome S1000 and K2 D Dome 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 1580 to 1680 mm and a width of 950 to 1050 mm can be used.

¬ After a max. rail length of up to 8.4 m a thermal separation of max. 15 cm has to be provided. Another thermal separation has to be provided for in cross-direction (parallel to the long sides of the modules) after max. 8.40 m row length.

¬ For the installation of the K2 S Dome S1000 and K2 D Dome systems, only standard module end clamps may be used. 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 sides of the modules. You can obtain the approval list from your account manager or at http://www.k2-systems.com/. 

Assembly Dome on trapezoidal sheet
MOUNT SPEEDCLIPS

Align SpeedClips horizontally with each other using a chalk line, and mark the position of the rail on the roof. Mount each SpeedRail onto the high bead. The K2 logo here points in the direction of the roof ridge. Distance from the edge: each a quarter of the rail length (with max. 4.20 m: approx. 1 m). The SpeedClips themselves are each fastened with two self-tapping hexagonal screws 6x36 mm with EPDM seal washers.

¬ No pre-drilling! – Except in the case of overlapping sheets, to avoid spaces.
¬ Thickness of steel troughed sheet: min. 0.5 mm (assuming 360 N/mm²)
¬ Thickness of aluminium troughed sheet: min. 0.8 mm (assuming 195 N/mm²)
¬ Spacing dimension between axes and top edge SpeedClip: 55 mm
¬ The spacing between the rows of rails is the length of the module being assembled + 20 mm
¬ Tightening torque based on flush fit.

Materials required: SpeedClip, tapping screws with sealing washer
PLACE SPEEDRAIL

Guide the SpeedRail diagonally into the upper groove of the first two SpeedClips fixed on the roof and push upward until they can go no further.

Materials required: SpeedRail

Lay SpeedRail onto the supporting area of the SpeedClips…

… and push into the lower groove.
PLAN IN THERMAL EXPANSION

Due to thermal expansion, we recommend that the rows are separated after 6.10 m; they must be separated after a maximum of 8.40 m (2 x 4.20 m). The minimum spacing for thermal cut is 3 - 5 cm between two rails.

The modules may never be fixed over the thermal expansion joint.

Materials required: SpeedRail
**FIX SPEEDRAIL IN PLACE WITH ADDITIONAL SPEEDCLIPS**

In the low beads, push further SpeedClips onto the rail…

Materials required: SpeedClip

…press onto the rail…

…push SpeedClip downwards along the rail into the top groove of the SpeedClip…

…and then push into the correct position on the top bead.
FASTEN SPEEDCLIPS

Fasten each SpeedClip with two self tapping screws 6x36 mm. The number of additional clips that are required depends on the wind and snow loads and is stated in the issuing of the order. Screw down the self-tapping screws to flush fit.

Materials required: SpeedClip, self tapping screws

ADHERE TO CLIP SEQUENCE AND SPACING

Insert every fourth clip with the K2 logo downward in order to prevent shifting in the direction of the roof edge.

Distances between two clips:
- Roof edge area: max. 40 cm
- Roof centre: max. 75 cm; when mounting in cross-bracing: max. 50 cm

For reasons of seating stress and tightness, never fix two SpeedClips into a top bead! Next to each other. For rail joints directly on a top bead: always fasten SpeedClips to the respective closest top bead of the rails.

Important! At the end of each rail, a SpeedClip must be fastened to the last top bead! The cantilever of the rail must be no more than 25 cm.

Materials required: SpeedClip, self tapping screws
LAYING “FLUSH”

Between two rails joined “flush” against each other, always use a SpeedConnector: insert this into the rails and bolt to the rail itself with 2 countersunk self-tapping screws 4.8x16 in the area of the bottom beads. Tightening torque moment max. 4 Nm. A row of joined rails may be no longer than 8.40 m. The minimum rail length must not be shorter than 1.00 m.

Materials required: SpeedConnector Set

The roof panel must under no circumstances be drilled through! Therefore never drill in the area of the top bead! One must drill so as to prevent a collision with slot nuts later inserted.

ASSEMBLY SPEEDLOCK

The SpeedLocks must always be mounted in the centre of the rail. The centre point of joined rails is the centre of the total length. First insert an M K2 slot nut level with a SpeedClip and turn it clockwise by 90°. Fix the SpeedLock above the SpeedClip with the M K2 Slot nut with clip using an M8x20 countersunk head screw. Tightening torque 14 Nm. The SpeedClip fastens the SpeedLock and therefore the row of rails.

Materials required: SpeedLock Set
**IMPORTANT INFORMATION**

- The necessary number of SpeedClips and SpeedLocks have to be determined in individual cases according to local wind and snow loads.

The SpeedLocks generally have to be mounted at or close to the centre of the rail lengths.

**FIT DOME S1000**

Insert two M K2 slot nuts in the rail and turn 90° clockwise until they lock. Thereafter, position the Dome S1000 on the rail and fasten with two M8x20 Allen Bolt and S8 locking washers.

Torque: 16 Nm

Materials required: Dome D1000, M K2 slot nuts, Allen bolt M8x20, Lock washer S8

**FIT DOME SD**

Insert one M K2 Slot nut in the rail and turn 90° clockwise until it locks. Then position the Dome SD on to the rail and tighten with an M8x20 Allen Bolt and an S8 locking washer.

Align both SD Domes according to the adjacent picture. The distance between the components is approximately equal to the module width.

Materials required: Dome SD, M K2 slot nuts, Allen bolt M8x20, Lock washer S8
POSITION MODULES AND FASTENING DOME SD

The module is laid horizontally in the centre of two S1000 Domes. The specially affixed bars serve as a stop. Thereafter, the module is positioned on the Dome SD. Push the not yet fully fastened Dome SD upwards towards the module until the Dome SD sits perfectly with the module frame and fasten the bolts. Torque 16 Nm.

Attention:
Only modules approved for clamping may be used on the short side may be used, see point „GENERAL RULES“ on page 10. Please take care not to cover any drainage holes in modules, as otherwise potential condensation cannot run off.

Materials required: Module

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 module end clamps, Allen bolt M8 and S8 locking washers into the slot nuts. If the module end and mid clamp set is supplied, fasten the entire set in the groove.

Use two standard module middle clamps each between two modules which are also fastened with Allen bolt M8 screws and S8 locking washers in the M K2 slot nuts.

Alternatively, XS mid clamps can be used. However, longer screws must be used in this case. With XS middle clamps the Allen bolt length is defined by the module frame height +15mm. Torque: 14 Nm.

Materials required: Module end/ mid clamp Set
INSTALL THE WINDBREAKER

First position the upper fold of the symmetrical windbreaker on the bar of the Dome S1000. The foiled surface must face outwards. We recommend removing the foil once installation is completed.

Align the windbreaker against the module edge and fasten with the Allen bolt M8 with the aid of the elongated holes and washers in the screw channel.

When two windbreakers overlap, position the plates in such a way that the screws can be screwed in the screw channel with the aid of the elongated holes. For this a washer must be used.

It must be ensured that the last windbreakers in a row do not project over the Dome S1000.

Torque 16 Nm

Materials required: Dome S1000 Windbreaker, Allen bolt M8x16, hexagon socket screw 8.4x30x1.5 washer

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, the alternative K2 S-Level 2.11 installation system must be used!
Please take care not to cover any drainage holes in modules, as otherwise potential condensation cannot run off.
IMPORTANT INSTRUCTIONS FOR ASSEMBLY

¬ For the SpeedRail 36: module cables can be laid within the rail, but the plugs must not lie in the rails.
¬ Slot nuts at butt joints of the rails must be avoided!
¬ The modules may never be fixed over the thermal expansion joint.
Alternative Mounting D-Dome with Speedrail on to Trapezoidal Fit Dome SD

Insert one M K2 slot nut 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 picture. The distance between Dome SD and Dome D1000 is approximately equal to the module width.

Materials required: Dome SD, M K2, Allen bolt M8x20, S8 locking washer

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 M8x20 Allen bolts and S8 locking washers.

Torque: 16 Nm

Materials required: Dome D1000, M K2, Allen bolt M8x20, S8 locking washer

Fit Dome SD

Insert one M K2 slot nut 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 picture. The distance between Dome SD and Dome D1000 is approximately equal to the module width.

Materials required: Dome SD, M K2, Allen bolt M8x20, S8 locking washer

Assembly Dome on trapezoidal sheet
POSITION MODULES AND FASTENING DOME SD

The modules are laid horizontally in the centre of two Dome D1000s. The specially affixed bars serve as stop.
Thereafter, the module is positioned on two Dome SDs. Push the not yet fully fastened Dome SD upwards towards the module until the Dome SD sits perfectly with the module frame and fasten the bolts.

Torque: 16 Nm.

Only modules approved for clamping may be used on the short side may be used, see point „GENERAL RULES“ on page 10. Please take care not to cover any drainage holes in modules, as otherwise potential condensation cannot run off.

Materials required: Module

FASTEN MODULE

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

Fasten the modules at the end of each row with Modul End Clamps, allen bolt M8 and locking washers S8 into the M K2 slot nuts. If the Modul End and Mid Clamp Set is supplied, fasten the entire set in the channel.

Use two standard Modul Middle Clamps each between two modules which are also fastened with Allen bolt M8 and S8 locking washers in the M K2 slot nuts.

Alternatively, Modul Mid Clamps XS can be used. However, longer screws must be used in this case.

Torque: 14 Nm.

Materials required: Modul End/ Mid Clamp, M K2, M8 Allen bolt, S8 locking washer
SYSTEM ORIENTATION + MAINTENANCE WALKS

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.

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. All contact details can be found at:

http://www.k2-systems.uk.com/contact.html

Our General Terms of Business apply. Please refer to http://www.k2-systems.com/en/gsc.html. German Law shall apply excluding the UN Convention on CISG. Place of venue is Stuttgart.
Mounting systems for solar technology

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