Mounting systems for solar technology

K2 systems

ASSEMBLY INSTRUCTIONS
SPEEDRAIL 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 – MULTIPLY CERTIFIED

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.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 SpeedRail system. 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	| item number system-specific
	Material: aluminium EN AW-6063 T66	
	Alternative: SpeedRail 36	| item number system-specific
	K2 SpeedClip	| 1001164
	Material: glass fibre reinforced PA, EPDM	
		| 1001622
	K2 Self-tapping screw 6x36 mm	
	Material: stainless steel, EPDM, WS 8 mm	
	Alternatively: K2 Self-tapping moulded screw 6x38 mm	| 1005193
	K2 SpeedConnector Set	| 1003571
	The set consists of: ¬ 1 SpeedConnector, aluminium ¬ 2 countersunk drilling screws 4,8x16 mm (1003083), bit TX 25, stainless steel	
	K2 SpeedLock Set	| 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	

ADDITIONAL MATERIAL FOR PORTRAIT INSTALLATION

K2 Module End Clamp Standard Set

| Article number
system-specific

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

| Article number
system-specific

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

ADDITIONAL MATERIAL FOR LANDSCAPE INSTALLATION (WITH ADD-ON)

M K2 slot nut with clip

| 1001643

Material: stainless steel and PA

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

| 2000034

K2 AddOn

| 1005530

Material: glass fibre reinforced PA

K2 Module End Clamp Standard

| Item number
module-specific

Material: aluminium plate finished/ black anodized

K2 Module Middle Clamp Standard

| Item number
module-specific

Material: aluminium plate finished/ black anodized

K2 Allen Bolt
M8 DIN EN ISO 4762
Material: stainless steel A2, WS 6 mm

| Item number
module-specific

K2 Lock Washer
DIN EN 10151
Material: stainless steel A2

| 1000473

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.

Cordless Screwdriver

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

Torque wrench

WS 5 mm and 6 mm
(WS= wrench size)

Chalk line

Measuring tape

GENEREL INSTRUCTION:

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.

¬   Earthing must be ensured (use lightning arrestor clamp if necessary).

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

¬   If the troughed sheet is to be fastened with calottes, please never bolt the SpeedClips to the calottes!
    Instead of this, mount all SpeedClips staggered in this sequence on the troughed sheet.

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

¬   The product is petty-patent-protected and **patent pending.**

¬   However, due to thermal expansion, we recommend that the rows be interrupted after 6.10 m; they
    must be interrupted 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

¬   Rows of rails up to a length of 6.10 m will require one SpeedLock and rows of rails up to a length of 8.40 m
    require two SpeedLocks.

¬   For the SpeedRail 36: module cables can be laid within the rail, but the plugs must not lie in the rails.

¬   When laying frameless modules vertically, always build in a stopper to prevent sliding-off for each module.

¬   M K2 Slot nuts at butt joints of the rails must be avoided!

¬   Never mount module middle or end clamps directly onto the rail joint or rail end!
    (Distance: min. 20 mm from module end clamp)

SPEEDRAIL-ASSEMBLY: STEP BY STEP
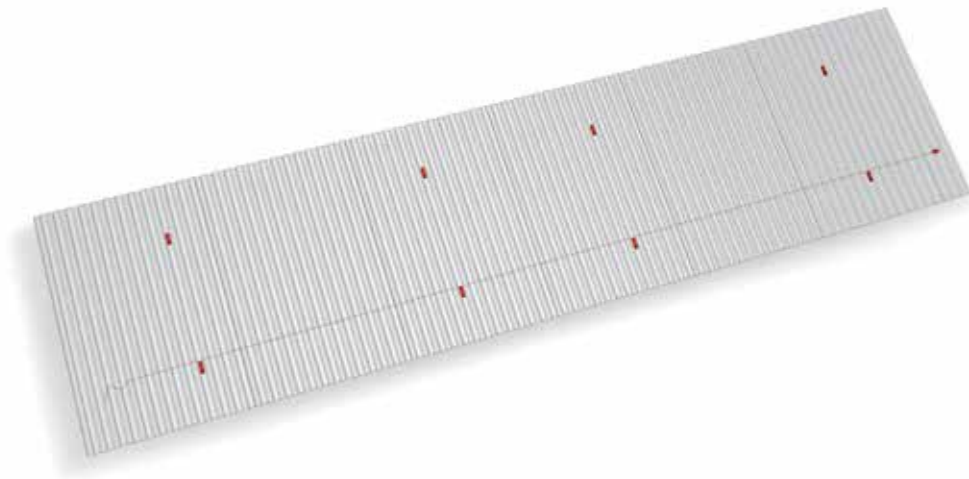
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MOUNT SPEEDCLIPS

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. 6.10 m: approx. 1.5 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
¬ **Tightening torque based on flush fit.**

Materials required: K2 SpeedClip, K2 Self-tapping screw 6x36 mm

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.

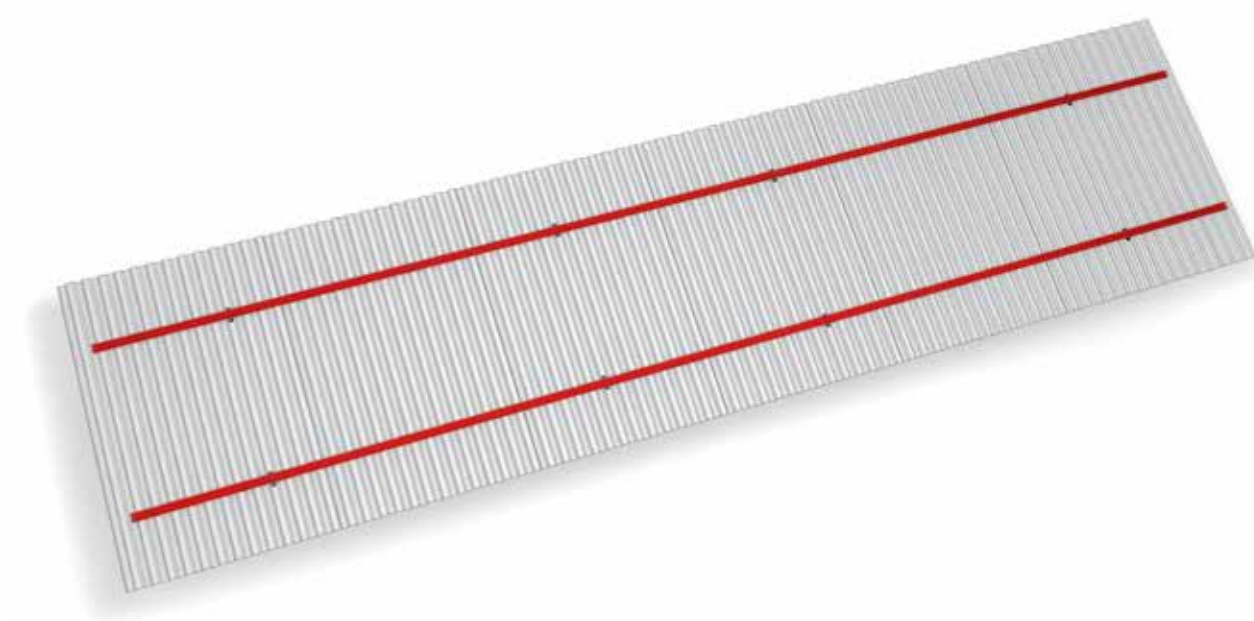Materials required: Mounting Rail K2 SpeedRail

Lay SpeedRail onto the supporting area of the SpeedClips…

… and push into the lower groove.

PLAN IN THERMAL EXPANSION

The SpeedRail must always be built in the clamping range approved by the module manufacturer. However, due to thermal expansion, we recommend that the rows be interrupted after 6.10 m; they must be interrupted 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: Mounting Rail K2 SpeedRail

FIX SPEEDRAIL IN PLACE
WITH ADDITIONAL SPEEDCLIPS

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

Materials required: K2 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: K2 SpeedClip, self tapping screws 6x36 mm
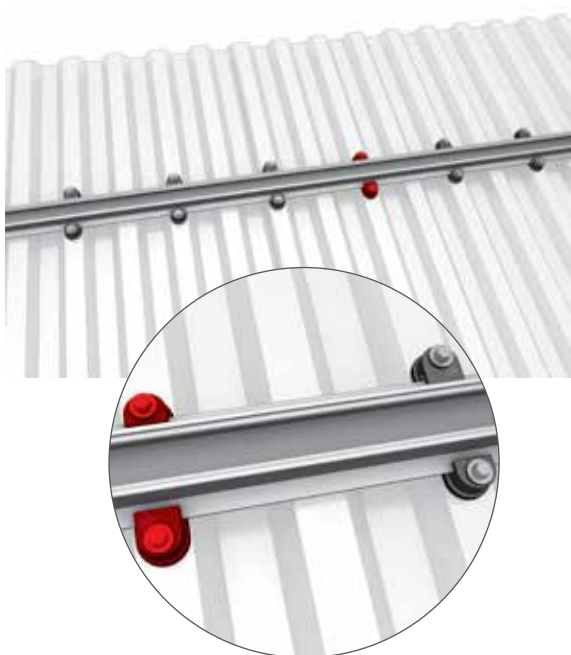
ADHERE TO CLIP SEQUENCE
AND SPACING

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

The distances between two clips are project-specific and can use the calculation program K2 base are determined:
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** build **two** SpeedClips into a top bead!
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: K2 SpeedClip, self tapping screws 6x36 mm

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 two 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: K2 SpeedConnector Set
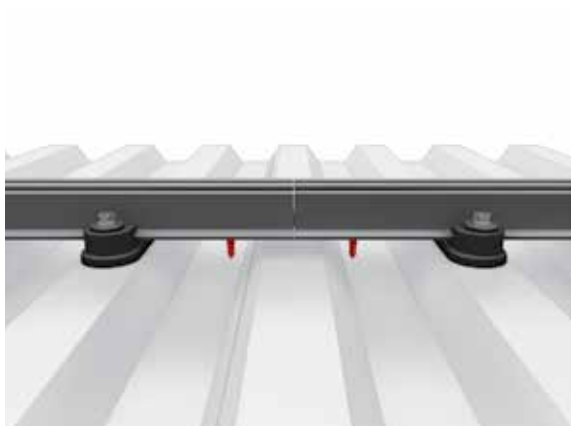
The roof panel must **under no circumstances** be drilled through! Therefore never drill in the area of the top bead! One must drill so as to prevent a collision with M K2 slot nuts later inserted.

ASSEMBLY SPEEDLOCK

The SpeedLocks must always be mounted in the middle of the rail. The middle point of joined rails is the middle of the total length. First insert an M K2 slot nut level with a Speed-Clip and turn it clockwise by 90°. Screw the SpeedLock over the SpeedClip with the M K2 using an M8 x 20 countersunk head screw. Tightening torque 14 Nm. The SpeedClip fastens the SpeedLock and therefore the row of rails.

Materials required: K2 SpeedLock Set
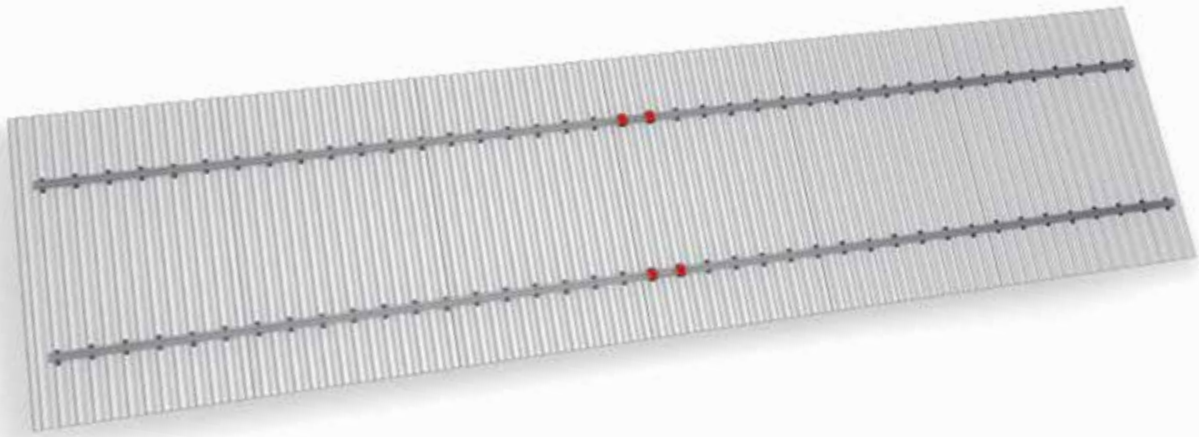
IMPORTANT INFORMATION

¬ **Rows of rails up to a length of 6.10 m will require one SpeedLock and rows of rails up to a length of 8.40 m require two SpeedLocks.**

¬ **SpeedLock 22 should be used for SpeedRail 22 and SpeedLock 36 for SpeedRail 36.**

¬ **These assembly instructions must also be followed for space-saving assembly (see page 17) and AddOn assembly (see page 18).**

FASTEN MODULES

First of all, insert the M K2 slot nut in the SpeedRail and turn 90° clockwise. If the module end and middle clamps are supplied as a set, please fix the whole set in the rail. Fasten the solar modules onto the rails according to the manufacturer's information.
Tightening torque moment 14 Nm.

Materials required: Module End Clamp Standard Set

Each module at the end of a row is to be fastened with end clamps and Allen bolts M8 and M K2 slot nuts.

ATTACH MODULE GAPS

Using with XS Middle Clamp

Use two XS Middle Clamps between two modules, which must also be fixed with the Allen Bolt M8 into the M K2 slot nuts.
For the XS Middle Clamps, longer screws are required than for the Standard Middle Clamps. Tightening torque 14 Nm.

Note: A XS Middle Clamp reduces the gap between modules to 13 mm.
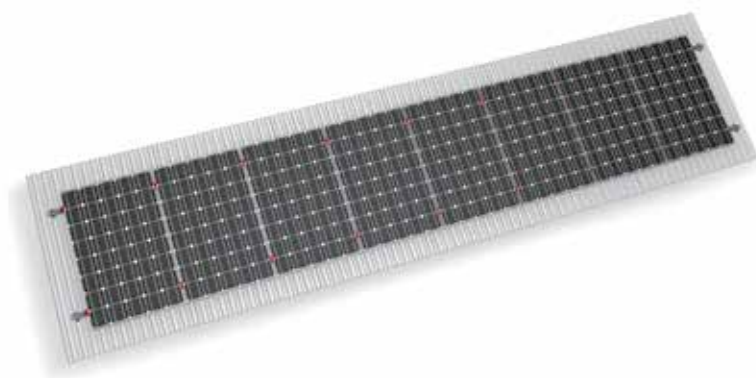
Required materials: Module Middle Clamp XS Set
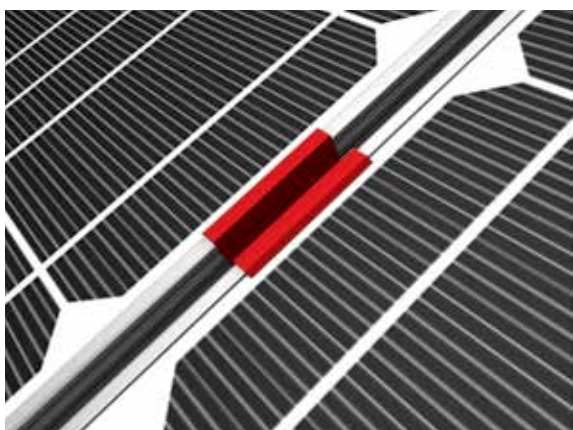
Attaching with Standard Middle Clamp

Use two standard module middle clamps between two modules, which also need to be screwed with allen bolt M8 in the M K2 slot nuts. **Pay attention to the mounting instructions by module manufacturer!**
Tightening torque 14 Nm.

Required materials: Module Middle Clamp Standatd Set

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.
¬   When laying frameless modules vertically, always build in a stopper to prevent sliding-off for each module.
¬   Slot nuts at butt joints of the rails must be avoided!
¬   Never mount middle or end clamps directly onto the rail joint or rail end! (Distance: min. 20 mm from end clamp)
¬   The modules may never be fixed over the thermal expansion joint.

ALTERNATIVE SYSTEM ASSEMBLY
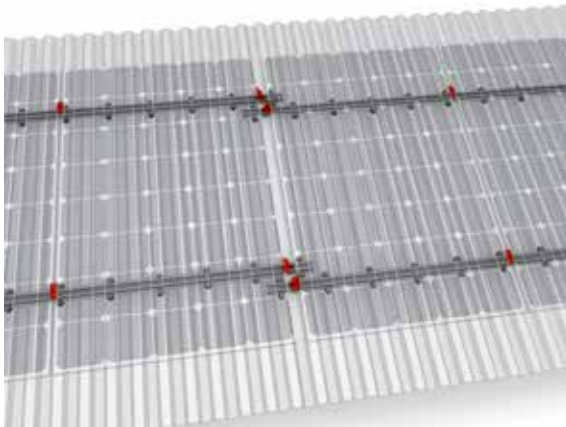
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SPACE-SAVING ASSEMBLY

You can offset every second row of rails to save space when assembling the SpeedRail. The space between the rails is the space required for mounting the SpeedClips. The next rail is laid at the same height as the first. This assembly method reduces the distance between the modules at the end of the rail to 40 mm. Module edges should be aligned. The total length of a row of rails may not exceed 8.40 m.

Module installation can be optimised using the K2 XS middle clamp (13 mm between modules). **Important: you will need longer screws.**

Space-saving assembly is particularly suitable for integrated roof solutions on trapezoidal sheet metal roofs in France.
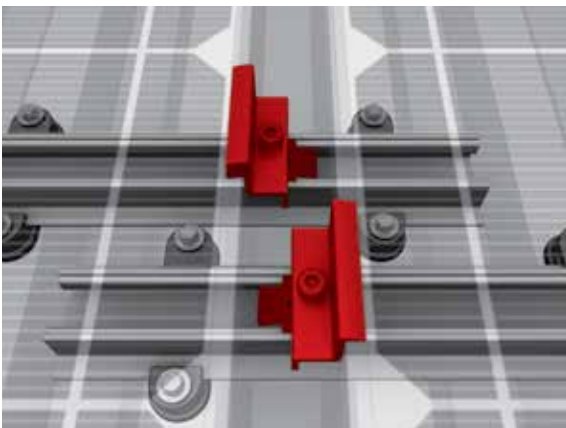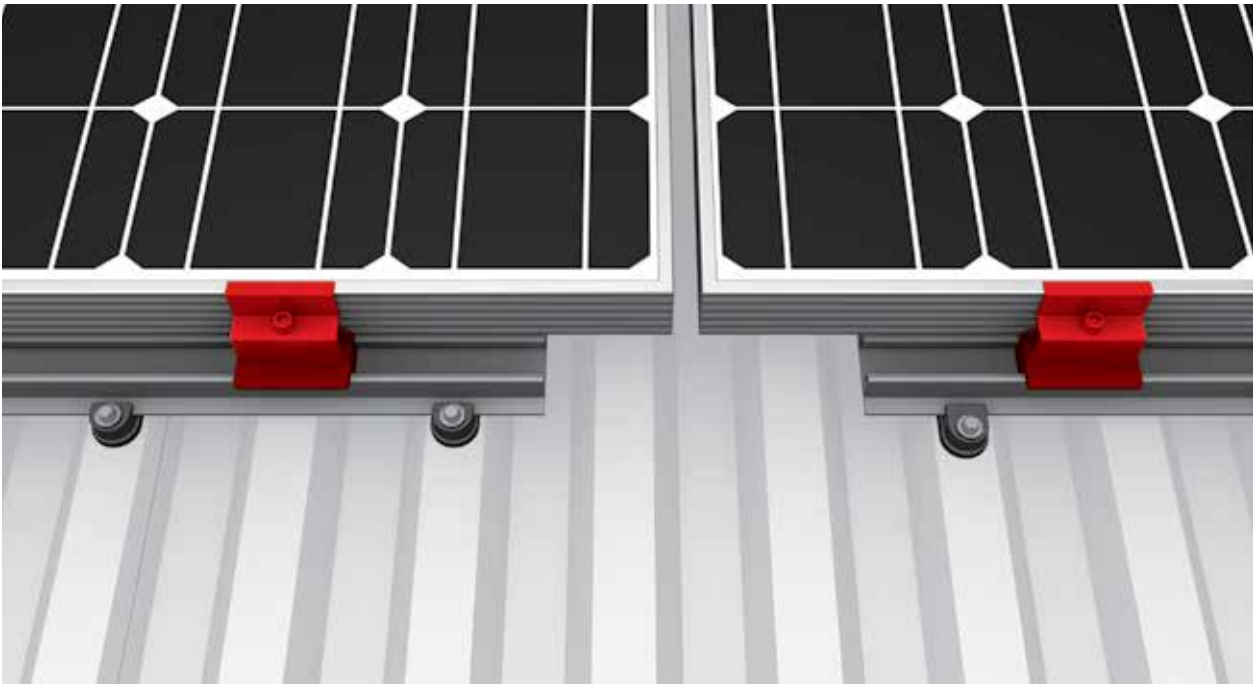

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RAIL PROJECTION

How far the rail projects depends on the width of the modules. It must be at least 20 mm from the module end clamp.
Please note that the clearance between two clips on a seam have to be at least 10 mm.

① SPEEDRAIL WITH ADDON ASSEMBLY

The total rail length for modules mounted horizontally in a grid formation using the K2 AddOn may not exceed 8.40 m. The thermal cut must be at least 3 - 5 cm. Modules are mounted using the K2 AddOn, the M K2 slot nut and end and middle clamp and the M8 Allen bolt.
If this assembly method is to be used, the roof must be correctly measured out and you must work with extreme precision.

Important: modules may not be clamped over the rail joint.
You must follow the K2 AddOn assembly instructions.

Ready! THANK YOU VERY MUCH FOR DECIDING TO PURCHASE 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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