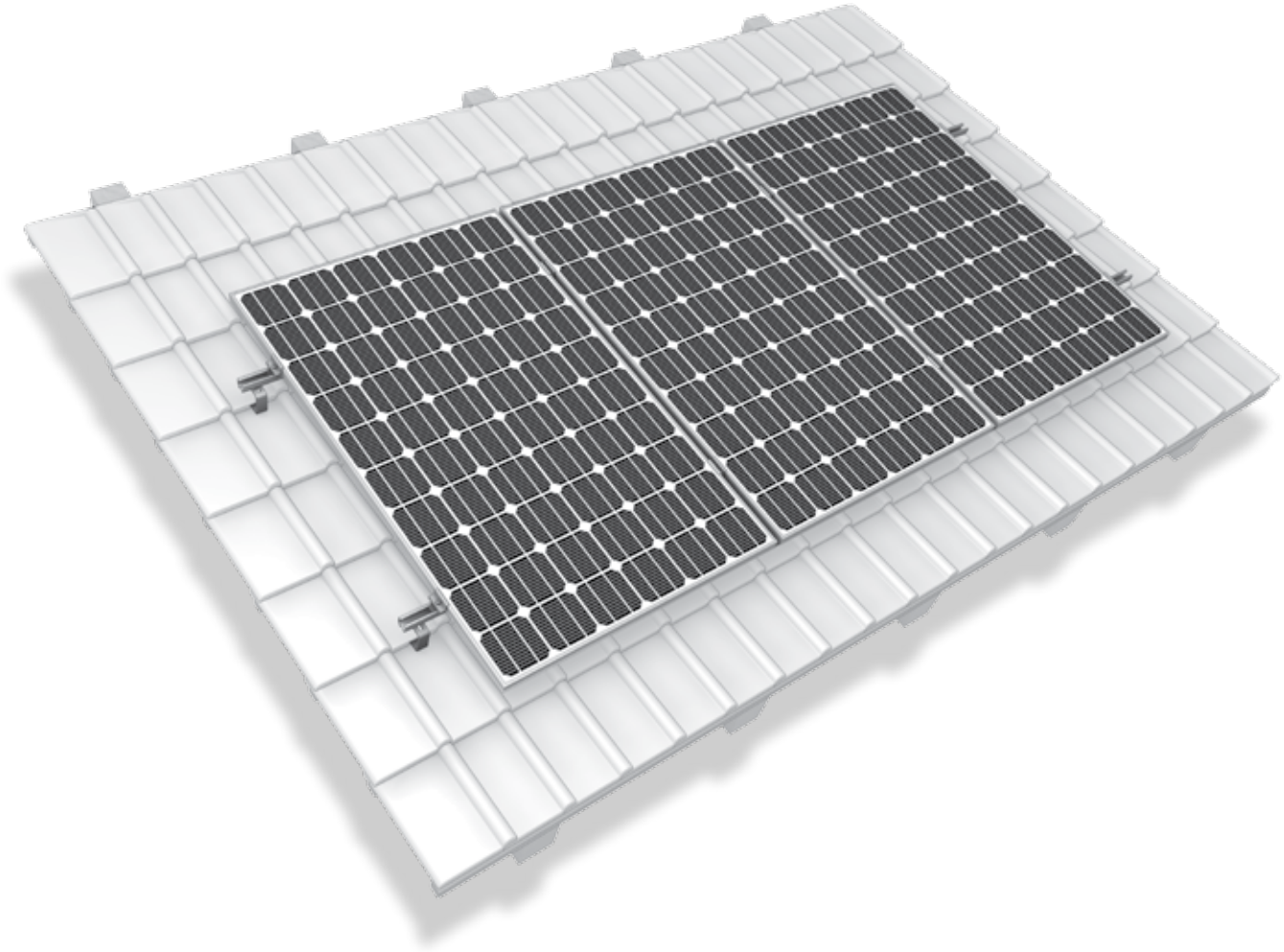
Mounting systems for solar technology



ASSEMBLY INSTRUCTIONS
ROOF FASTENER PAN TILE

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.
- The grounding must be prepared on site (if necessary use lightning protection clamp).
- 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! In this context we strongly recommend to also read our terms of guarantee 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 Roof Fastener Pan Tile system. The piece quantities are calculated on the basis of the respective requirements. The listed item numbers facilitate the comparison of items.

K2 Roof Fastener for Pan Tile

| Item number system specific

Material: stainless steel, (1.4016) welded both sides

This instruction also applies to the K2 roof fasteners
Vario 1, Vario 2, Vario 2s, Coppo, Spanish tile roof (rafter & concrete), Spanish tile roof (purlin)

K2 Self-drilling wood screw round head

| Item number system specific

Material: stainless steel A2, bit TX 25 for M6, TX 40 for M8

Alternatively for roof insulation:
K2 Self-drilling timber screw, round head, 2 threads

| Item number system specific

Material: stainless steel A2, TX 25

K2 T-Bolt M10x20

| 1000637

Material: stainless steel A2
Head form: 28/15

K2 Hexagon flange nut with serration M10

| 1000042

similar ISO 4161
Material: stainless steel A2, WS 15 mm

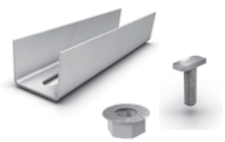
Mounting Rail K2 SolidRail Light 37

| Item number system specific

Material: aluminium EN AW-6063 T66

Alternatively: Mounting rail K2 SolidRail Medium 42
Mounting rail K2 SolidRail Alpin 60

| Item number system specific



K2 SolidRail UltraLight/ Light Rail connector Set

| 1004107

The set consists of:
¬ 1 Rail connector, aluminium EN AW-6063 T66
¬ 2 T-Bolt M10x30 (1000041), stainless steel A2
¬ 2 Hexagon flange nut with serration M10 (1000042), stainless steel A2

Alternatively: K2 SolidRail Medium/ Alpin Rail connector Set

K2 Module End Clamp Standard Set

| Item 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

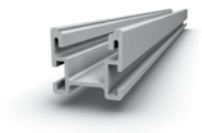
K2 Module Middle Clamp Standard Set

| Item 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: Middle Clamp Set XS | Item number system specific

ADDITIONAL MATERIAL FOR CROSS BRACING

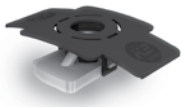


Mounting Rail K2 CrossRail 36

| Item number system specific

Material: aluminium EN AW-6063 T66

Alternatively: Mounting Rail K2 CrossRail 48 | 1001980



M K2 Slot nut with clip

| 1001643

Material: stainless steel, PA

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

K2 Climber 36/48

| 1002286

Material: aluminium EN AW-6063 T66

K2 Allen bolt

| 1000191

M8x25 DIN EN ISO 4762
Material: stainless steel A2, WS 6 mm

K2 Lock washer

| 1000473

DIN EN 10151
Material: stainless steel A2

AT A GLANCE: TOOLS OVERVIEW

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

Cordless screwdriver

With mount for TX 25 or TX 40

Torque wrench

WS 6 mm and 15 mm
(WS= wrench size)

Measuring tape

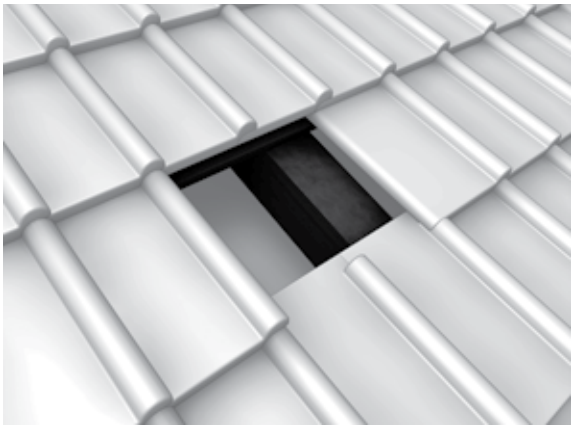
Angle grinder

IN GENERAL:

Please carefully read through all the steps first to ensure safe and correct assembly of the system. The required material is listed for each step.

- The grounding must be prepared on site and carried out in accordance to the respective national regulations.
- The General Installation Instructions must be adhered to.
  These can be found at: **http://www.k2-systems.uk.com/downloads/product-information.html**
- The K2 Systems planning instructions in this document define the spacing you must leave between the module rows. Please adhere to this.
- Please check on-site that the roofing has a strong enough hold on the supporting structure and the substructure.
- In the case of high snow loads the roof fastener boom must be supported with suitable measures (base plate) to avoid tile breaking.
- In the case of on-roof insulation or counter lathing, special screws must be used, to guarantee an even distance screw joint.
- The roof hook is not a climbing aid. Do NOT climb or step on the roof hooks during the install.
- Due to thermal expansion, we recommend to break the rows after 20 m, however, no further than 24.4 m. The minimum spacing for separation between the two K2 rails K2 is 3-5 cm.

ROOF FASTENER SYSTEM ASSEMBLY: STEP BY STEP



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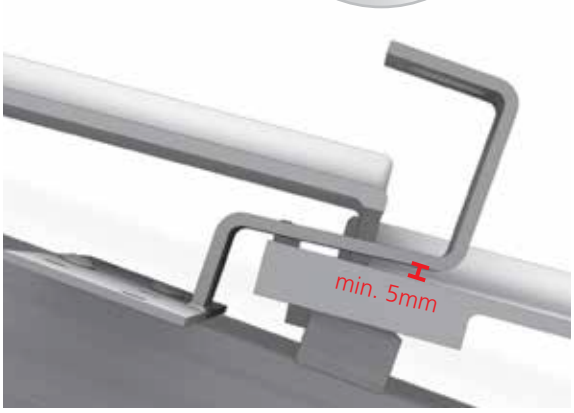
UNCOVER RAFTERS (REMOVE TILES)

The rafters, on which the roof fasteners are to be mounted on must be exposed. The height of the roof fastener must be checked and adjusted if necessary.



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ASSEMBLE ROOF FASTENER

The roof fastener must be mounted with a minimum of two self-drilling wood screw on to the wooden rafters (at least one screw per row of holes). This also applies to roof insulation or counter lathing. Horizontally align the roof fastener hangers in order to get into the hollow of the tile. Flex deck tiles and lower tiles in the area of the hanger. The top edges of the roof fasteners in a horizontal row must be at the same height.

The roof fasteners must be mounted in such a way that there is a minimum spacing of 5 mm between the roof fastener bracket and the tile.

The amount of roof fasteners that need to be mounted depends on roof requirements and will be specified when order is placed.

Required materials: K2 roof fasteners, self-drilling wood screw

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MOUNT CARRIER RAIL

The rail is mounted to the roof fastener with an T-bolt M10x20 and a hexagone flage nut. Due to thermal expansion, we recommend to break the rows after 20 m, however, no further than 24.4 m. The minimum spacing for separation between the two K2 rails K2 is 3-5 cm. Tightening torque 35 Nm.

Required materials: SolidRail, T-bolt M10x25, hexagone flage nut M10

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RAIL CONNECTOR ASSEMBLY

Lay CrossRail on joint with rail connector and connect with the 2 T bolts and hecagone flage nuts. The rail joint may not be in the range of the roof fastener.
Tightening torque 35 Nm.

Required materials: SolidRail Connector Set

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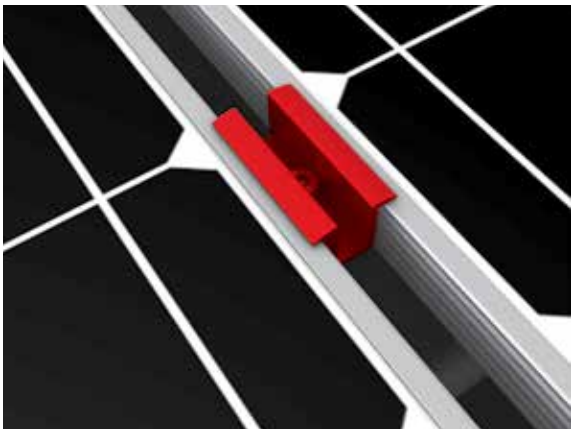
ATTACH MODULES

First of all, insert the M K2 slot nut in the SolidRail 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 into the rails according to the manufacturer's information.
Each module at the end of a row is to be fastened with module end clamps and Allen bolts M8 and M K2 slot nuts. Never mount end clamps directly onto the rail joint or rail end! (Distance: min. 20 mm from rail end!)

Please also note the fastening guidelines of the module manufacturer!
Tightening torque moment 14 Nm.

Materials required: module end clamp set



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FASTEN MODULES WITH MIDDLE CLAMP SETS

Between two modules, each time use two module middle clamps standard, which are to be bolted with Allen bolts M8 in the M K2 slot nuts.
Never mount module middle clamps directly onto the rail joint or rail end! (Distance: min. 20 mm from module middle clamp)
Please also note the fastening guidelines of the module manufacturer!
Tightening torque moment 14 Nm.

Materials required: module middle clamp standard set

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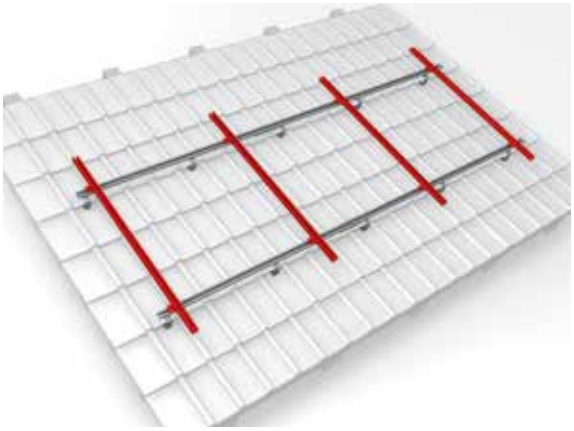
FASTEN MODULES WITH XS MIDDLE CLAMP SETS

Between two modules, each time use two XS module middle clamps, which are also to be bolted in the M K2 slot nuts with Allen bolt M8. With the XS module middle clamp, longer bolts are required than for the module middle clamp Standard.

Tightening torque moment 14 Nm.

Materials required: module middle clamp XS set

ALTERNATIVE SYSTEM DESIGNS (CROSS BRACING) WITH CROSSRAIL



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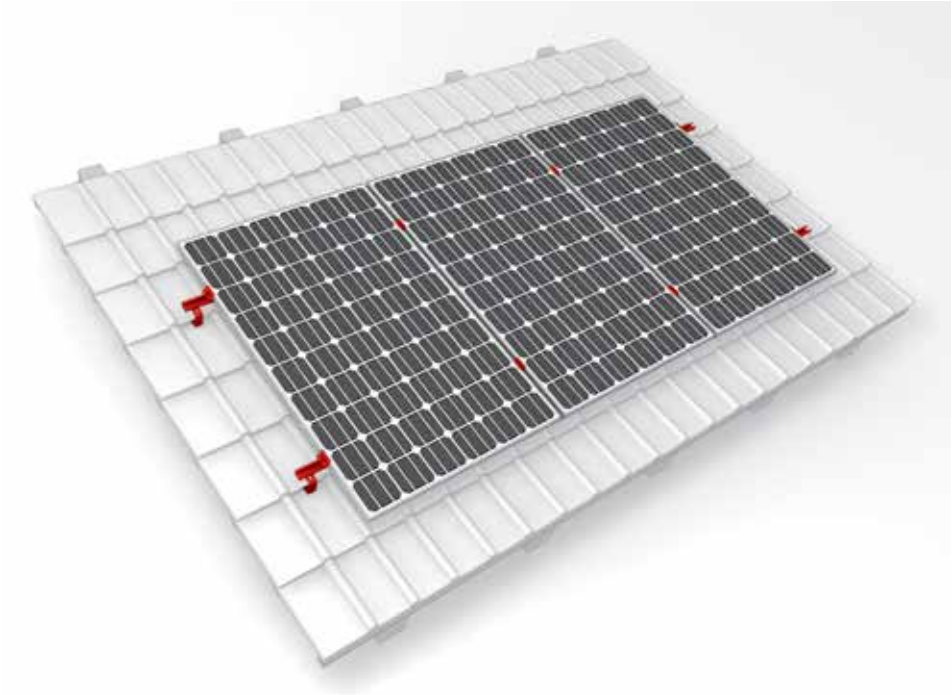
ASSEMBLE RAILS WITH CROSS BRACING

In cross bracing, the upper rail position is fitted using the Climber, M K2 slot nut and the allen bolt M8 to the desired location and with appropriate spacing.
Tightening torque 16 Nm

Required materials: Crossrail, Climber, M K2, Allen bolt M8

FULLY MOUNTED



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.
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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Montageanleitung Dachhaken Standard | GB6 | 0714 | Subject to change.