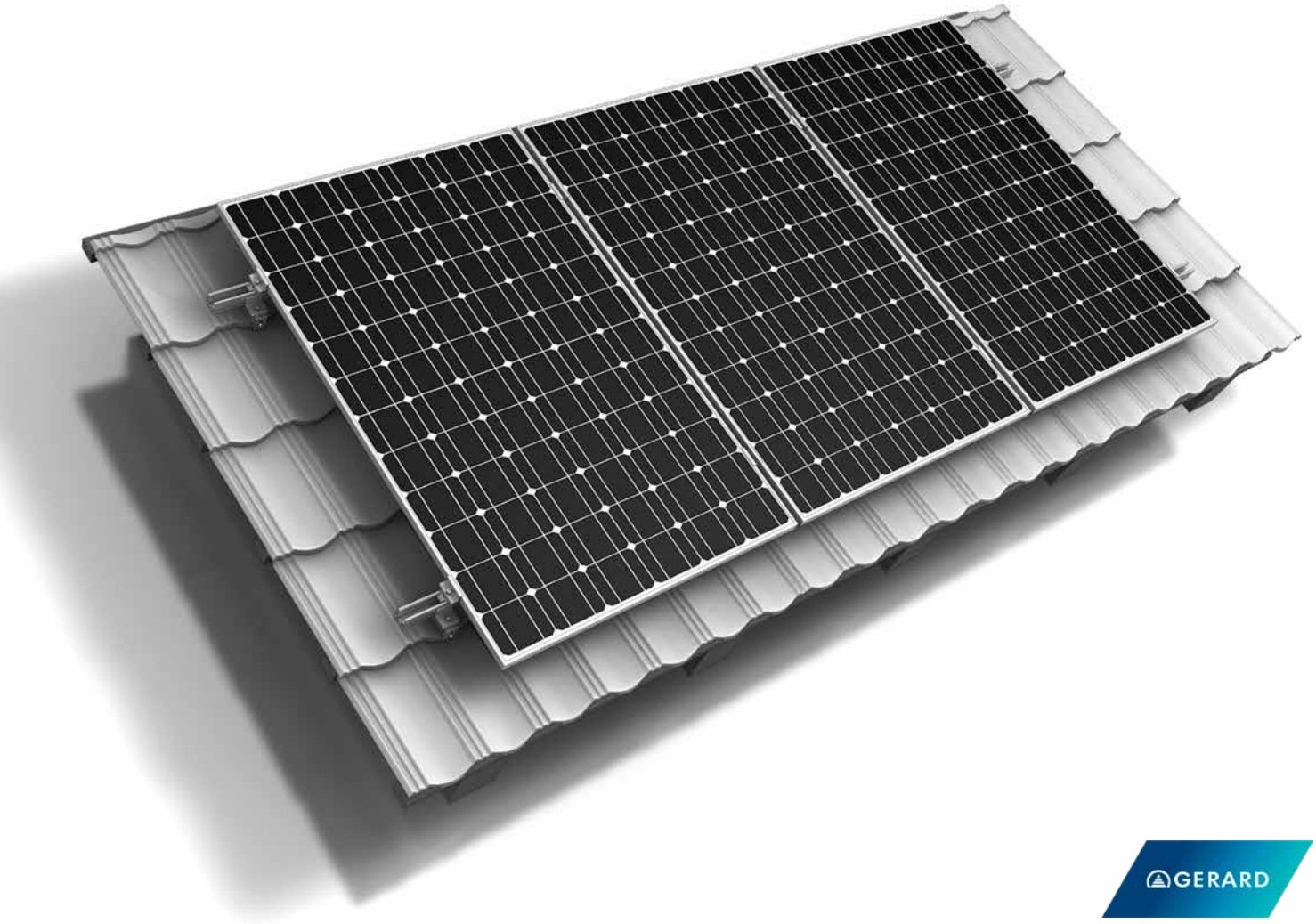
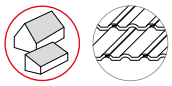
Mounting systems for solar technology



GERARD

ASSEMBLY INSTRUCTIONS

SingleHook 2G



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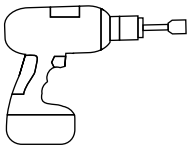
QUALITY TESTED – SEVERAL CERTIFICATIONS

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

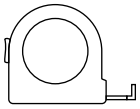
Tools overview



25 / 40

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 SingleHook system can be used without further testing by K2 systems in the following standard conditions. To calculate maximum distances between supports we recommend using our calculation tool K2Base. The system is also suitable for higher requirements. However, if a value exceeds the standard conditions, please contact K2 Systems.

ROOF REQUIREMENTS

- The sufficient holding force of the roof covering at the support or substructure must be ensured on site.
- Roof pitch of 5 – 75°

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).
- We recommend a thermal separation after maximum of 17.6 m.
- A minimum mounting distance of 50 mm from the end of the rail / rail joint to the module frame.
- Tightening torque for all module clamps 14 Nm
- For manufacturer information regarding clamps see the manufacturing module data sheet.
- To avoid tiles breaking under high snow loads, arrange for supporting the bracket with a suitable metal support plate.
- Do not step on roof hooks or rails, aren't climbing assists.
- Sizing and positioning of the wood screws are subject to the relevant regulations.
- Dimensioning and positioning of the woodscrews subject to the European Technical approvals (ETA) of the screw manufacturers.
- Special requirements apply with on-rafter insulation or counter battening: special fit-for-purpose spacer screws have to be used.

Essential: The materials required

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

K2 SingleHook 2G
30mm adjustability of the bracket
Material: Aluminium EN AW-6063 T66

| 2000636

K2 Self-drilling wood screw, stainless steel
Material: Stainless steel, TX 25 to M6, TX 40 to M8

| Article number system-specific

Self-drilling screw sheet metal EJOT 4,9x35
Material: stainless steel, TX 25, Ejot

| 2001620

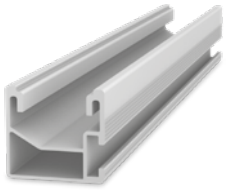
Climber 36/50 Solo long-hole
Material: Aluminium EN AW 6063 T66

| 2003140

K2 Allen Bolt
M8x20 according to DIN 912/ EN ISO 4762

Material: Stainless steel, drive: 6 mm

| 2001729



Mounting rail K2 SingleRail

Material: Aluminium EN AW-6063 T66

| Article number system-specific

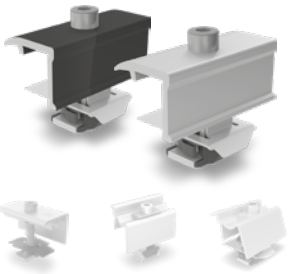
K2 SingleRail RailConnector Set

Material: Aluminium EN AW-6063 T66, Edelstahl A2

| Article number system-specific

K2 EndCap SingleRail 36
Material: glasfaserverstärktes PA

| 1004767

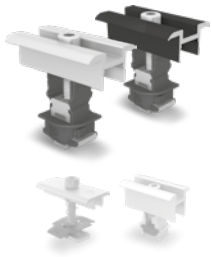


Module end clamps

| Article number system-specific

K2 Clamp EC 25-40

Alternative: XS Clamp EC 30/33/35 · OneEnd 30-42 · K2 Clamp EC 30-40, Hybrid



Module middle clamps

| Article number system-specific

K2 Clamp MC 25-40

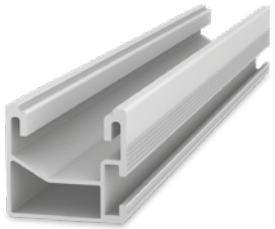
Alternative: XS Clamp MC 30/33-35 · OneMid 30-42

Optional: K2 Pad, distance pad

| 1002361

Material: glass fibre reinforced PA

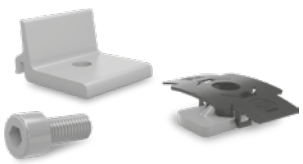
ADDITIONAL MATERIAL FOR CROSS BRACING



Mounting Rail K2 SingleRail

| Article number system-specific

Material: aluminium EN AW-6063 T66



K2 Climber 36/50 Set

| 2003145

The set consists of:

- 1 Climber 36/50, aluminium EN AW-6063 T66
- 1 Bolt with serrated under head M8×25, stainless steel A2
- 1 MK2 slot nut with clip, stainless steel und PA

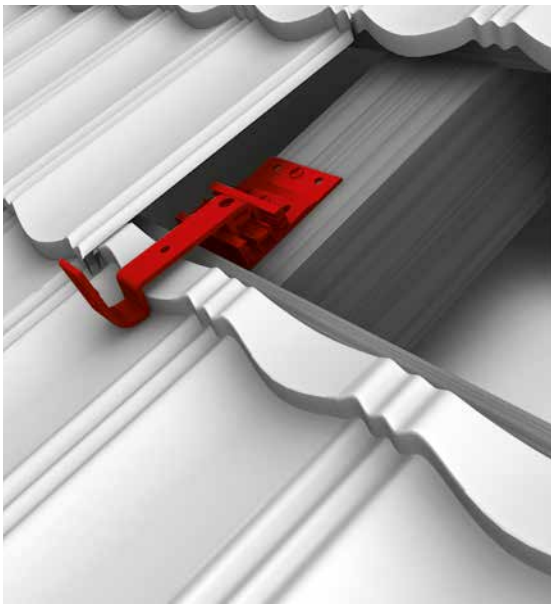
Assembly

1 REMOVE METAL TILE - REMOVE UPPER BRACKET

The rafters, where the roof hooks will be fixed to, have to be uncovered. In case of timber boarding or sarking boards instead of battens the exact position of the rafter has to be determined to ensure proper fixing of the roof hook.

Remove the upper bracket to place the remaining roofhook (base plate and lower bracket) on rafter and adjust the parts that the hook can be fixed. The height under bracket of the hook has to be checked and, if necessary, to be adjusted.The lower bracket position has to be in the valley of the tile.

2 FIX AND ALINE REMAINING ROOFHOOK



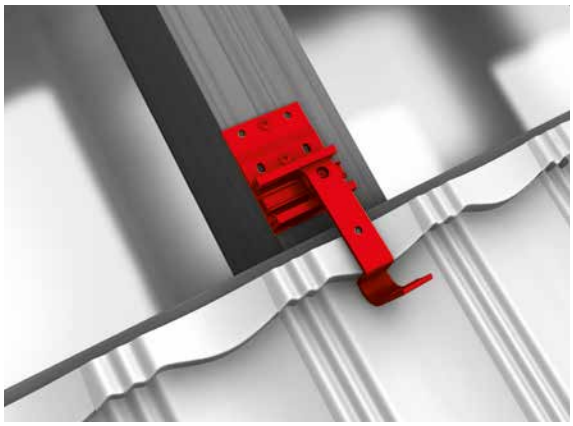
The roof fastener must be mounted with a minimum of 2 stainless steel timber screws on the wooden rafters (at least one screw per row of holes).
Choosing the dimensions and position of the screws has to be carried out according to the applicable regulations. With a layer of timber boarding or sarking boards it has to be ensured to fix the roof hook through the boards into the rafter.
After adjusting the brackets fasten the Allen bolt.

In addition, the bracket is fixed to the batten with a selfdrilling screw.

Torque: flush

Required materials: K2 SingleHook 2G, Timber screw

3 FIX AND ALINE REMAINING ROOFHOOK



Position the bracket of the roof hook horizontally in order to get into the trough of the tile. To do this, loosen the threaded pin of the bracket. When using the outermost lateral position, the side of the bracket must be flush with the side surface of the base plate.

The upper edges of the roof hooks of a horizontal row must be at the same level.

After adjusting the bracket, tighten the threaded pin. Tightening torque 16 Nm.

The bracket is additionally screwed into the battens with a self-drilling screw (any nails in this area must be removed beforehand).

The quantity and position of the roof hooks can be found in the K2 Base assembly plan.

Required materials: Self-drilling screw (EJOT 4,9x35)

4 FIX UPPER BRACKET

Then the previously removed metal tile is placed on top and moulded to the roof hooks with a suitable rubber mallet without damaging the covering skin of the tile. Fix the tile according to the manufacturer's instructions. No "notching" of the tile is necessary. Then screw the upper extension arm of the SingleHook 2G loosely to the lower extension arm again using the Allen bolt and the locking nut. The upper bracket is pushed down onto the metal tile until it touches the tile. This allows the force to be transferred via the tile into the roof construction. Please observe the installation guidelines of the metal tile manufacturer.
The upper bracket must be aligned horizontally. Tighten the screw of the upper bracket.

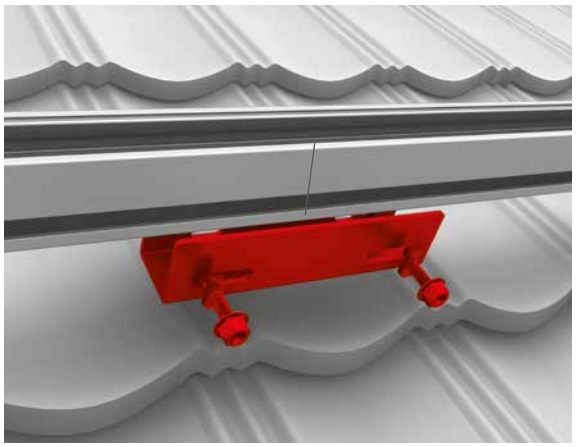
Tightening torque: 16 Nm

Required materials: Allen bolt with M8 hexagon socket, lock washer

5 MOUNTING RAIL ASSEMBLY

The mounting rail is mounted on the roof hook with the help of of the K2 Climber and the Allen bolt with under-head serration. Tightening torque 16 Nm.
Due to thermal expansion, the Rows can be separated after max. 17.6 m. The minimum distance for separation between two K2 rails is 3 - 5 cm.
Minor unevenness is compensated by one or more K2 pads stacked on top of each other are balanced.

6 RAIL CONNECTOR ASSEMBLY

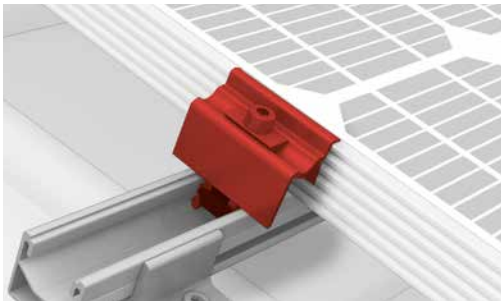


Lay the K2 SingleRail mounting rail butt-jointed and connect it with the help of the rail connector and the 4 hammer-head screws and locking tooth nuts. The rail joint must not be in the area of the roof hook. The connector must be mounted centrally above the joint.

Tightening torque 16 Nm.

Required materials: Rail connector set

7 ATTACH MODULE GAPS



Fix the module in place at the end of a row with universal module end clamp OneEnd. Klick the Stance in the notches. Alternatively use the standard end clamp. Insert the MK2 nut into the mounting rail and turn clockwise by 90 °. Place clamps on the module frames and fix them. Never mount module end clamps directly on the rail joint or end of the rail! (Spacing: min. 50 mm from edge of module frame). Pay attention to the mounting instructions by module manufacturer!

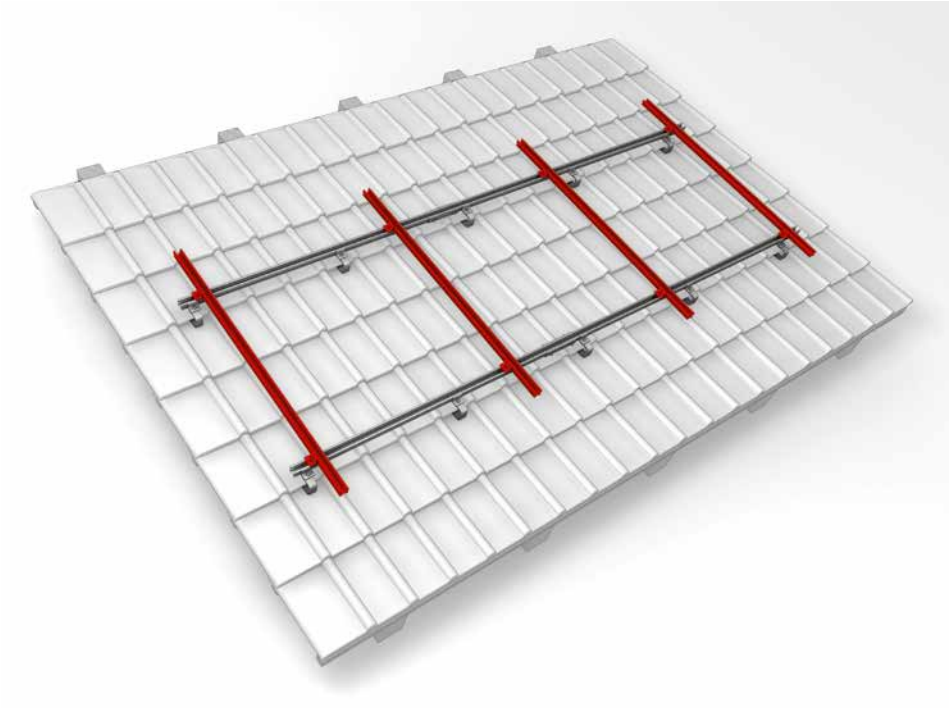
Tightening torque 14 Nm.

Use two universal module middle clamp OneMid between two modules. Klick the Stance in the notches. Place clamps on the module frames and fix them. Tightening torque 14 Nm.

Alternatively: Use two XS middle clamps between two modules

Assembly

ALTERNATIVE SYSTEM DESIGNS (CROSS BRACING) WITH SINGLERAIL



In cross bracing, the upper rail position is fitted using the

M K2 slot nut, climber and bolt with serrated under head M8 to the desired location, with appropriate spacing.

Tightening torque 16 Nm.

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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