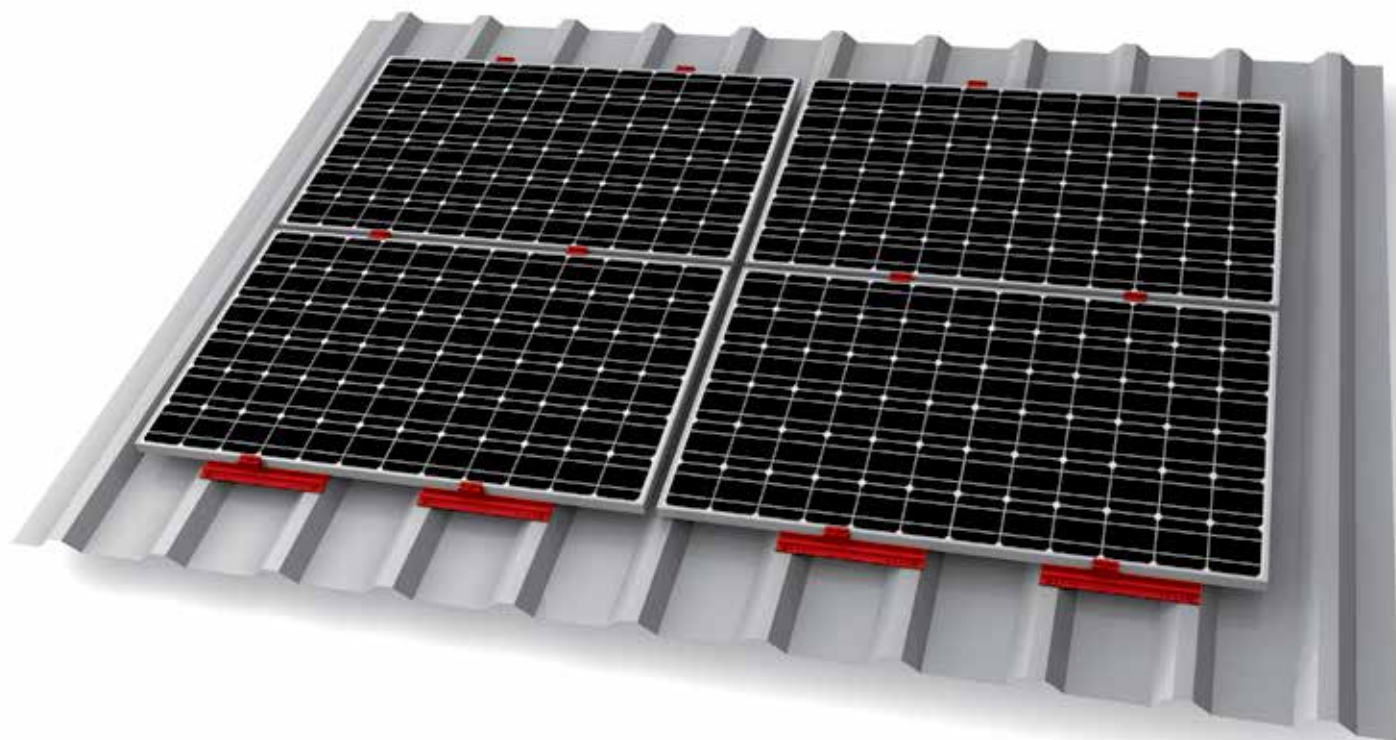


Mounting systems for solar technology



ASSEMBLY INSTRUCTIONS  
**MINIRAIL 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 – FOUR CERTIFICATIONS

K2 Systems stands for secure connection, highest quality and precision. Our customers and business partners have already known that for a long time. And three 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 [www.k2-systems.com/en/downloads/product-information.html](http://www.k2-systems.com/en/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 [www.k2-systems.com/en/downloads/product-information.html](http://www.k2-systems.com/en/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 [www.k2-systems.com/en/downloads/product-information.html](http://www.k2-systems.com/en/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 MiniRail system. The piece quantities are calculated on the basis of the respective requirements. The listed item numbers facilitate the comparison of items.



### K2 MiniRail MC Set (Middle Clamp)

| 1006480

(Set consisting of 40 MiniRails with EPDM seal, 40 pre-assembled MiniClamps MC and self-tapping metal-sheet screw with washer)

Material: Aluminium/ stainless steel, EPDM



### K2 MiniRail EC Set (End Clamp)

| 2000080

(Set consisting of 20 MiniRails with EPDM seal, 20 pre-assembled MiniClamps EC and self-tapping metal-sheet screw with washer)

Material: Aluminium

## 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 attachment for SW 6 (für Innenseckskant) und SW 8 (für Außen-sechskant) (SW: Schlüsselweite)



### Torque wrench

With attachment for SW6



### Chalk line



### Measuring tape



### K2 Spacer (Setting jig for landscape installation of modules)

## IN GENERAL:

- The grounding must be prepared on site (if necessary use lightning protection clamp).
- Our General Assembly Instruction must be adhered to..  
These can be found under: <http://www.k2-systems.com/en/downloads/product-information.html>
- If the trapezoidal sheet is fastened with calottes, please do not fasten the MiniRails on the calottes!
- The K2 Mini Rail System can be used on all trapezoidal sheet metals with a minimum crest width of 25 mm; in this case, only the contact surface of the crest (possible crest spacing is 175 and 202-350 mm) is measured. For different dimensions, the compatibility must be clarified in advance. It must be ensured that the clamps in the functional area of the rail can be mounted. The rail must be mounted with 4 screws at right angles to the high beads. The rail is moved laterally to the crest until the hole pattern of the rail corresponds to the high bead spacing selected. The MiniClamps are only suitable for modules with a frame height of 34-50 mm.
- We recommend a thermal separation after maximum of 18 m. (See step 4a/5b)
- MiniClamps can be used universally for landscape or portrait mounting applications.
- Do not assemble the MiniClamps at the end of the rail! (Spacing: min. 20 mm between rail end and MiniClamp)
- The MiniClamps must always sit between the two self-tapping sheet-metal screws which secure the rail to the trapezoidal sheet.

## IN GENERAL:

The MiniRail system can be used without further testing by K2 systems in the following standard conditions:

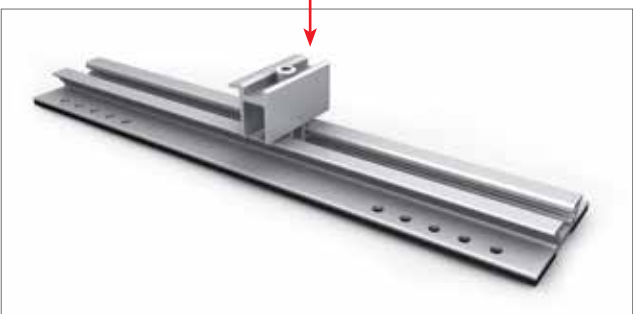
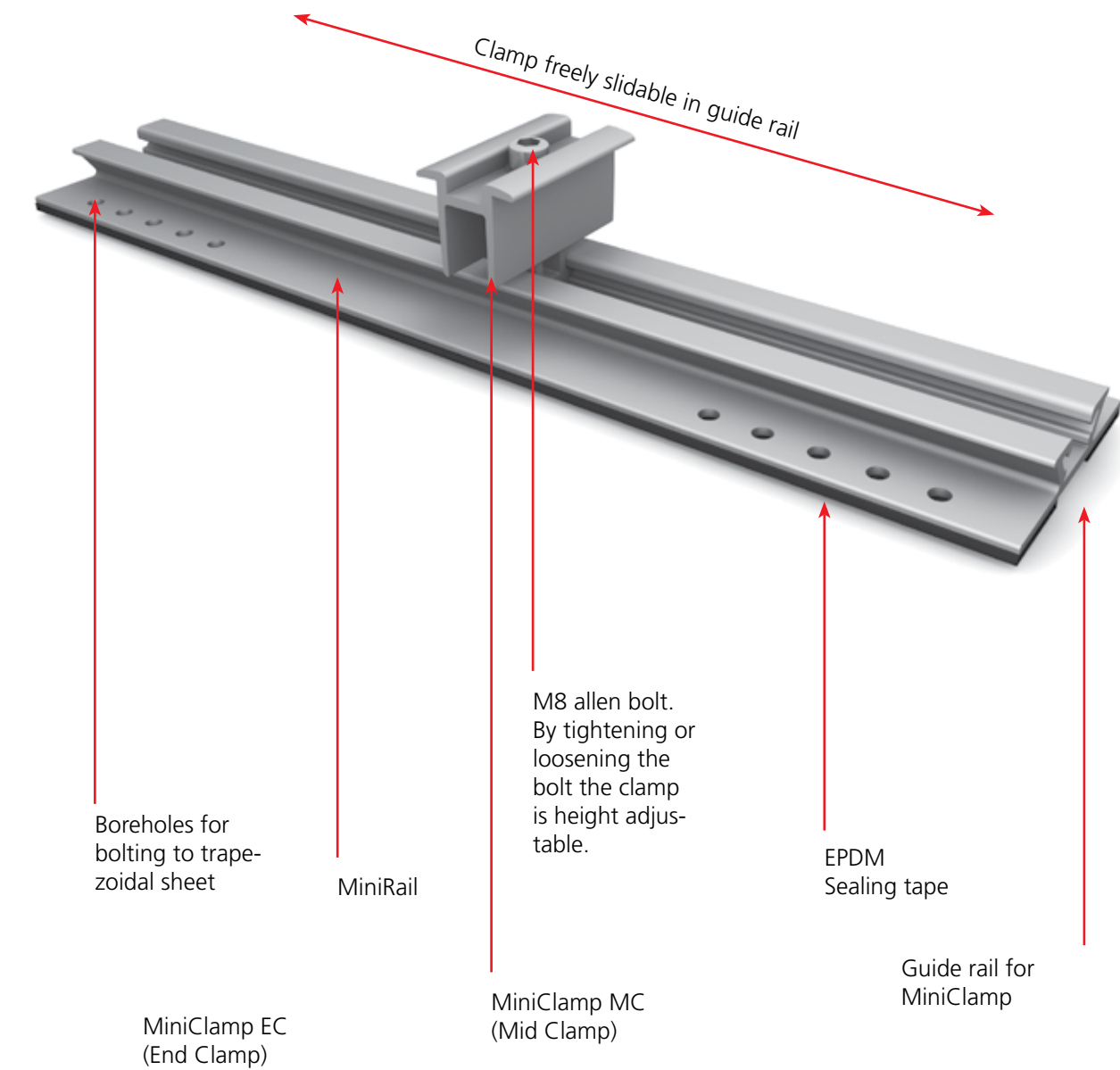
- ↪ Minimum trapezoidal sheet thickness of 0.5 mm (for S235 according to DIN EN 10025-1) or 0.8 mm for aluminium (with a tensile strength of 195 N / mm<sup>2</sup>)
- ↪ Roof pitch of 5 - 65 °
- ↪ Wind load of max. 0.9 kN / m<sup>2</sup> (in central roof areas H and I)
- ↪ Snow load of up to 1.8 kN / m
- ↪ Maximum module surface area of a single module of up to 1.7 m<sup>2</sup>
- ↪ The sufficient holding force of the roof covering at the support or substructure must be ensured on site.

**Of course, the system is also suitable for higher requirements.**

**However, if a value exceeds the standard conditions, please contact K2 Systems.**



# MINIRAIL SET COMPONENTS



MiniClamp EC Set with end clamp

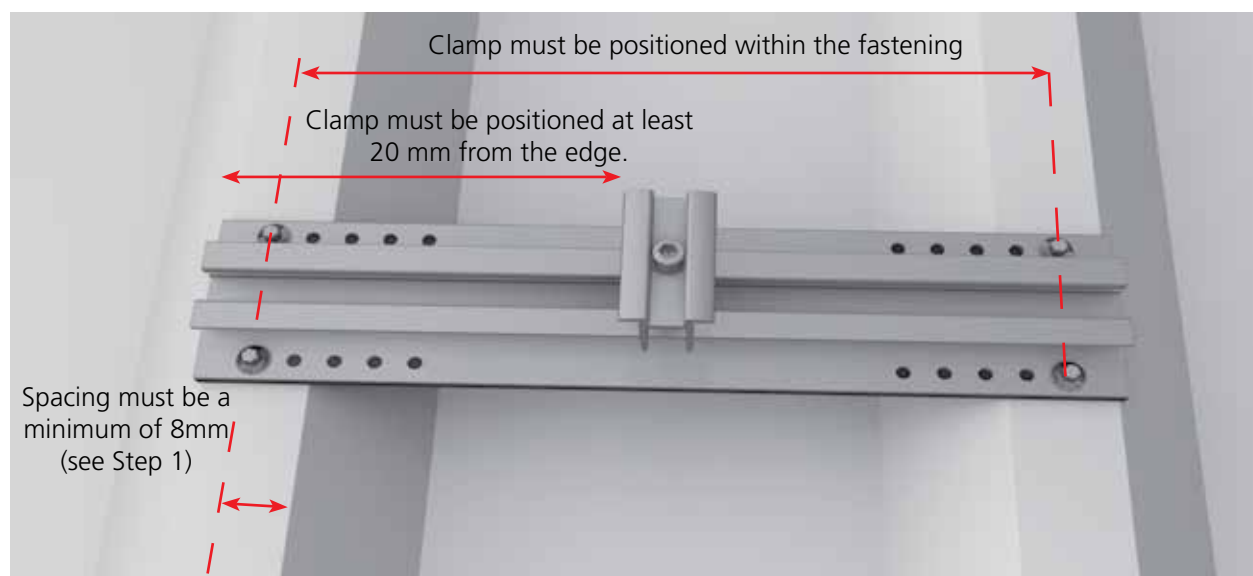
Always included in the set:



Self-tapping sheet-metal screw with washer 6.0 x 25

## GENERAL ASSEMBLY INSTRUCTIONS FOR PORTRAIT AND LANDSCAPE INSTALLATION:

Do not assemble the MiniClamps at the end of the rail. Minimum spacing of 20 mm of the MiniClamp to the edge of rail. Additionally, the MiniClamp must always be mounted between the two self-tapping sheet-metal screws. (This will increase if necessary, the spacing to the edge of the clamp)

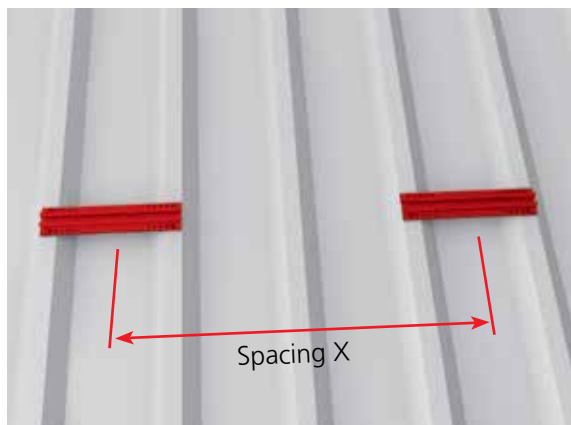


## GENERAL INSTRUCTIONS FOR MOUNTING THE MINIRAILS

With the MiniRail aligned correctly, the rails are fastened to the trapezoidal sheet with 4 self-tapping sheet metal screws each. The EPDM seal under the rail may be compressed a maximum of 50% (maximum 1.5 mm compression). The center of the screw must be spaced a minimum of 8 mm to the edge of the trapezoidal groove to ensure proper sealing.

Materials required K2 MiniRail, self-tapping sheet-metal screws

## MINIRAIL SYSTEM ASSEMBLY, PORTRAIT: STEP BY STEP



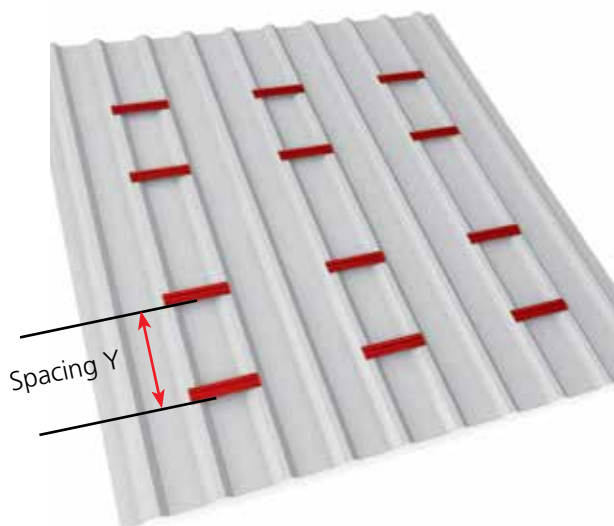
**1a**  
of 4

### MEASURING THE RAIL FOR PORTRAIT ASSEMBLY

(For modules in landscape please see step 1b on Page 14)

- To ensure proper alignment and adjustment of the bottom rail, we recommend using a chalk line.
- The horizontal spacing X between the functional sectors of the MiniRails depends on the width of the modules. This means for example if a module is 1000 mm wide, the functional areas of the rails must also cover this spacing.
- The functional sectors of the rail is between the selftapping screws. After proper adjustment, the rails of the bottom row are fastened as described in the General Assembly Instructions.

Materials required: K2 MiniRail, self-tapping sheet-metal screws

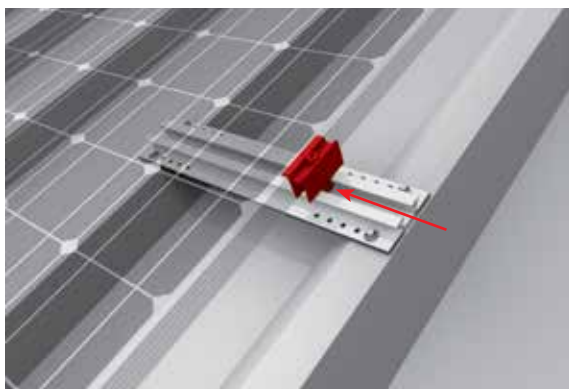


**2a**  
of 4

### MEASURE AND ATTACH THE OTHER RAILS

- The vertical spacing Y of the MiniRail depend on the clamping range of the modules. The manufacturer's assembly instructions must be adhered to. This means for example when the clamping range of the modules allow a spacing of e.g. 800 mm, the rails are mounted with 800 mm as spacing Y (leading edge to leading edge). Now the other rows can be mounted according to Steps 1a and 2a.

Materials required: K2 MiniRail, self-tapping sheet-metal screws



**3a**  
of 4

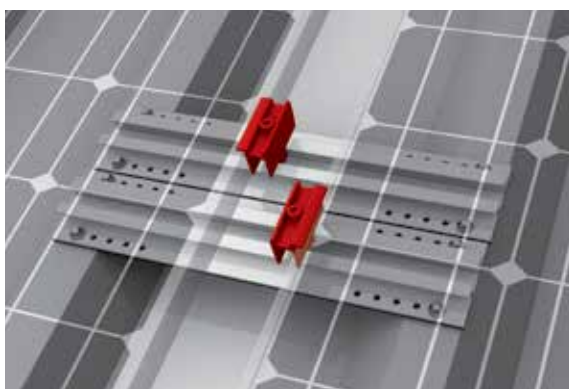
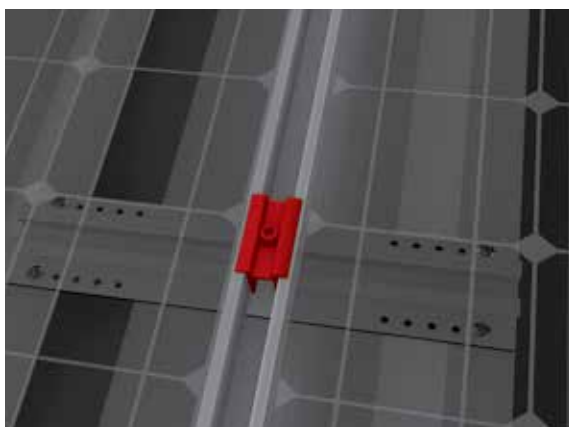
## MOUNTING THE MINICLAMP EC

The MiniClamp EC is inserted laterally into the MiniRail. The MiniClamp EC can be rotated by 90°. When the MiniClamp EC has been properly aligned to the module frame, tighten the M8 bolt with a torque of 14 Nm. Attach modules to mounting rails according to manufacturer's instructions and clamping range.

The following procedure must be adhered to for the fastening of the clamps:

1. Insert one MiniClamp EC each laterally in the outermost MiniRails.
2. Position the first module and insert both MiniClamps EC laterally and tighten with a 14 Nm torque.
3. Insert both MiniClamps MC into the neighbouring MiniRail.
4. Place the second module and position the MiniClamps MC flush.
5. Now the first MiniClamps MC can be fastened. Tightening torque: 14 Nm
6. The other modules are mounted identically.
7. The last module row is again fastened with the MiniClamps EC, as described above.

Materials required: MiniClamp EC, module

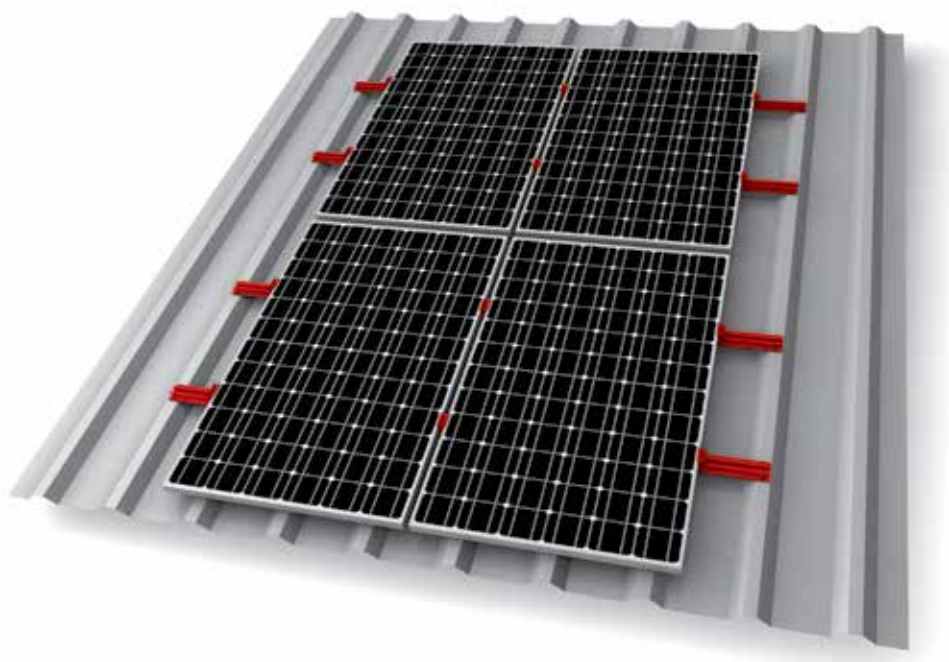


**4a**  
of 4

## THERMAL SEPARATION - PORTRAIT MOUNTING

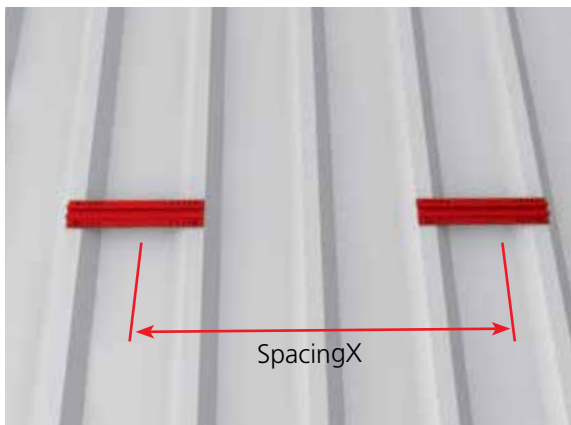
We recommend a thermal separation between the modules after a maximum total length of 18 m in horizontal direction. Two rails must always be used for thermal separation, as shown in the chart.

## VIEW OF THE ASSEMBLED SYSTEM IN PORTRAIT MOUNTING





## MINIRAIL SYSTEM ASSEMBLY, LANDSCAPE: STEP BY STEP

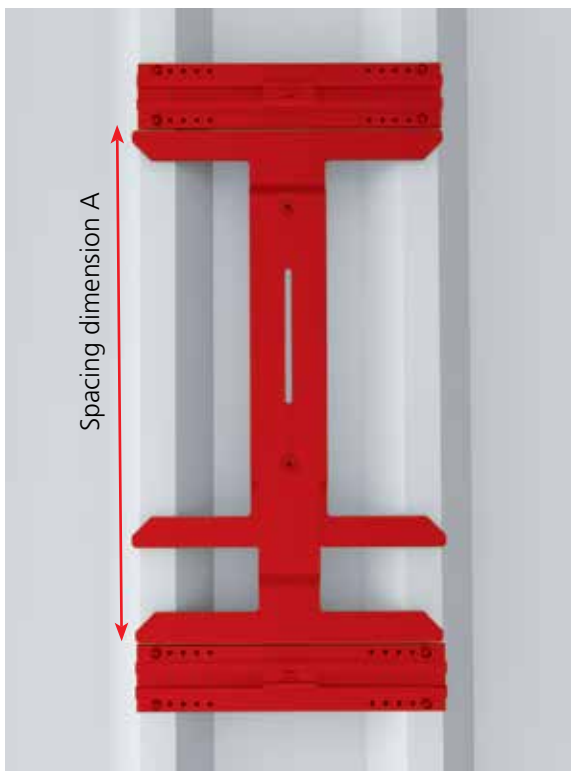


**1b**  
of 5

### MEASURING THE RAIL FOR LANDSCAPE INSTALLATION

- To ensure proper alignment and adjustment of the bottom rail, we recommend using a chalk line.
- The horizontal spacing X between the functional sectors of the rails depends on the length of the modules. The manufacturer's assembly instructions must be adhered to. If the distance of the clamping range of the modules is, for example 800 mm, the functional sectors of the rails must also be mounted at this spacing. The functional sector of the rail is between the self-tapping sheet-metal screws.

Materials required K2 MiniRail, self-tapping sheet-metal screw



**2b**  
of 5

### MEASURE AND ATTACH THE OTHER RAILS

After the bottom row of rails has been properly mounted as described in step 1b, the next row of rails is measured with the K2 Spacer.

Note:

This mounting method requires very precise working, we recommend the use of the jig K2 Spacer.

The inside dimension A is calculated as follows: Module width minus 65 mm. As an example: for an 800 mm wide module, the spacing to be set at 735 mm:  $800 \text{ mm} - 65 \text{ mm} = 735 \text{ mm}$

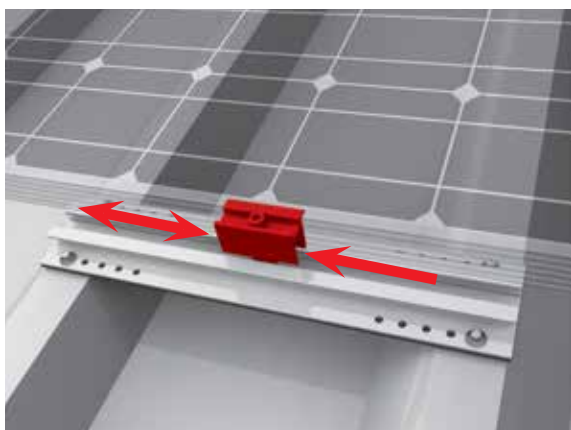


**3b**  
of 5

## MEASURING THE RAIL WITH THE K2 SPACER

When the K2 spacer and the dimension A is set as described above, the spacer is placed on one of the bottom rails and thus defines the position of the next horizontal row of rails. Now the other MiniRails can be mounted as described in the General Assembly Instructions.

Required materials: K2 MiniRail, self-tapping sheet-metal screw with washer



**4b**  
of 5

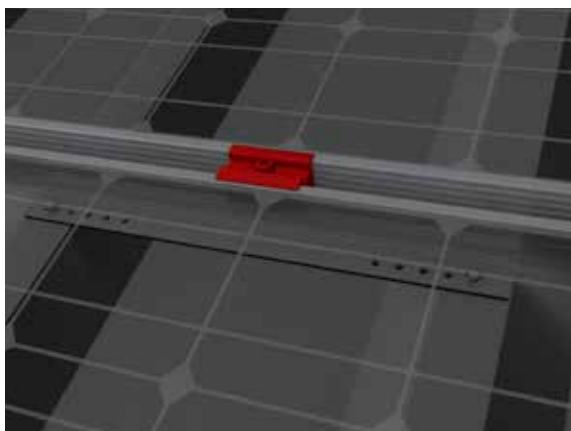
## MODULE ASSEMBLY

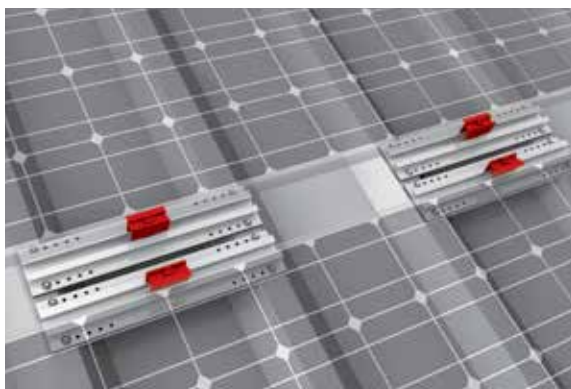
When all rails have been positioned and fastened with the K2 Spacer, the modules can be fastened with the MiniClamp EC/MC. For this the clamp is inserted laterally into the rail. First the MiniClamp EC is adjusted laterally by 90 ° rotations to the orientation of the module. When MiniClamp EC has been properly aligned, tighten the M8 bolt with a torque of 14 Nm. Attach modules to mounting rails according to manufacturer's instructions and clamping range.

The following procedure must be adhered to for the fastening of the clamps:

1. Insert one MiniClamp EC each laterally in the outermost MiniRails.
2. Position the first module and insert both MiniClamps EC laterally and tighten with a 14 Nm torque.
3. Insert both MiniClamps MC into the neighbouring MiniRail.
4. Place the second module and position the MiniClamps MC flush.
5. Now the first MiniClamps MC can be fastened. Tightening torque: 14 Nm
6. The other modules are mounted identically.
7. The last module row is again fastened with the MiniClamps EC, as described above.

Materials required MiniClamp EC, module



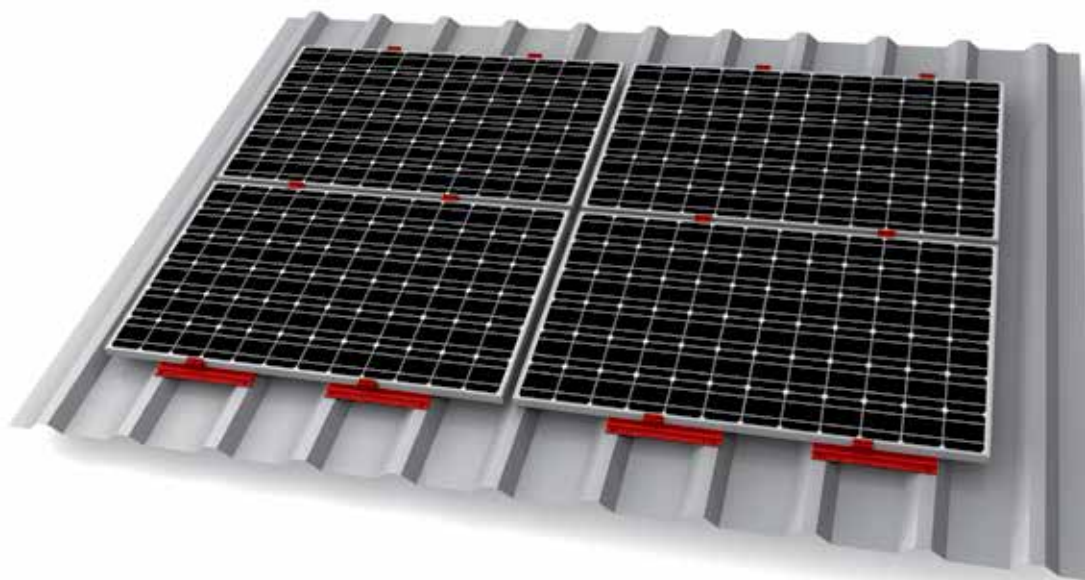


**5b**  
of 5

## THERMAL SEPARATION, LANDSCAPE ASSEMBLY

We recommend a thermal separation between the modules after a maximum total length of 18 m in horizontal direction; two rails are required at a separation, one with clamp holding the module to the left, another one to hold the module on the right.

## VIEW OF THE ASSEMBLED SYSTEM IN LANDSCAPE ASSEMBLY



**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. We are looking forward to receive your call on our

**Service-Hotline +49 (0) 7152-3560-0**

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 MiniRail | GB4 | 1013 | Subject to change.  
Product illustrations are exemplary illustrations and may differ from the original.

