

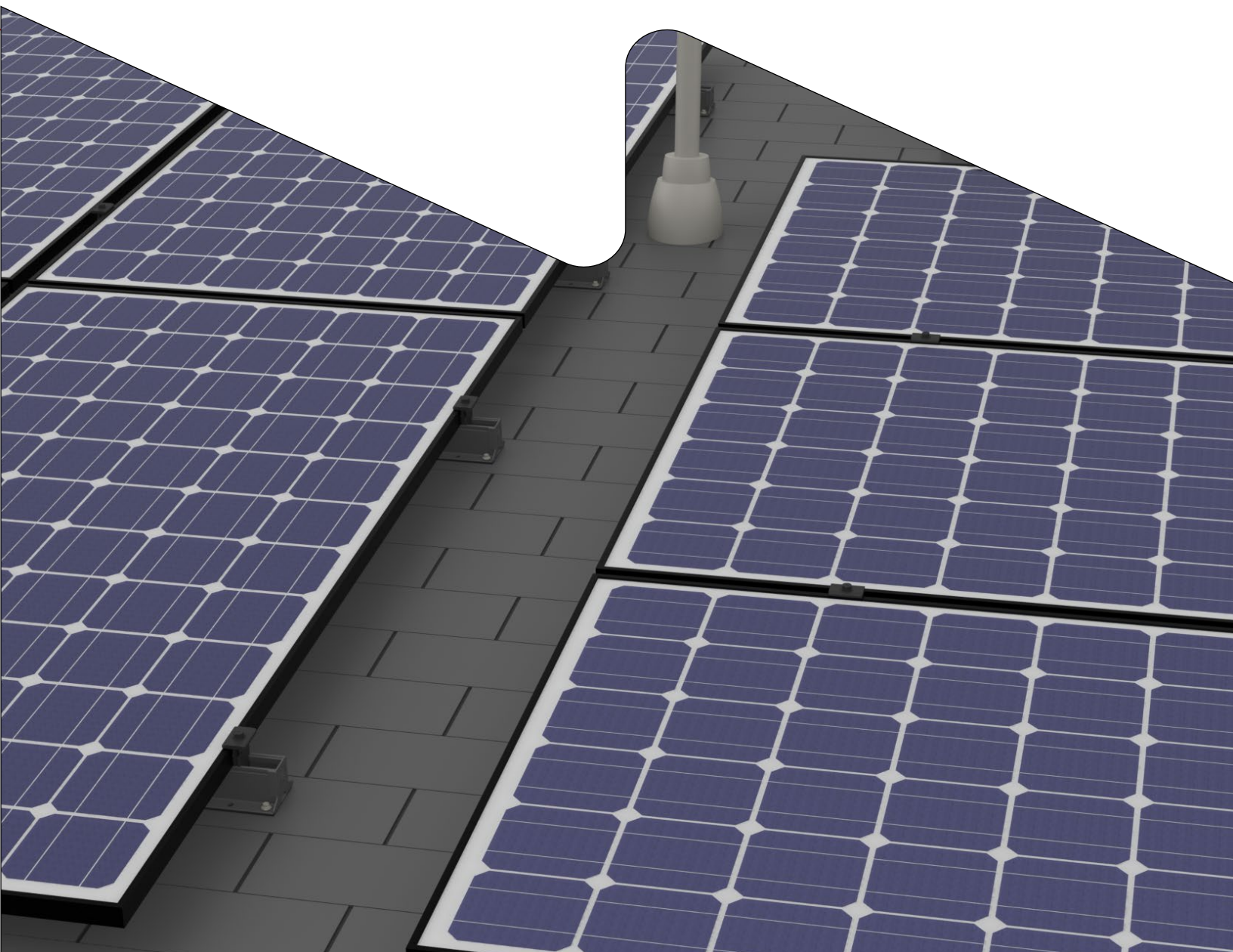


Connecting Strength

MiniRail Comp



ASSEMBLY INSTRUCTIONS





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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:

<https://k2-systems.com/en-us/company/quality-management/>

Engineering strength is at our core



With sophisticated product innovations and a deep customer focus, K2 Systems is the engineering leader for all your mounting system needs. We are a market leader with more than 32 GW installed worldwide.

We offer proven product solutions and innovative designs. Wind tunnel testing along with advanced structural and electrical validation to facilitate permitting, design and installation. Our designs result in cost competitive racking systems with dedicated support that will position you to win more projects.

We partner with our customers and suppliers for the long-term. High quality materials and cutting edge designs provide a durable, yet functional system. Our product line is comprised of a few, coordinated components that lower the cost of materials, and simplify installation, saving you time and money. All backed by German engineering, a long track record of quality and a company that is here to stay.

Thank you for choosing K2 Systems for your Solar PV Project.

General Safety Information



Please note that our general mounting instructions must be followed at all times and can be viewed online at <https://k2-systems.com/en-us/resource-center/download-library/>

- /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 are required.
 - /Protective equipment such as safety helmet, boots and gloves must be worn.
 - /Roofing works must be in accordance with roofing regulations utilizing fall protection safeguards when eaves height exceeds 6 ft.
 - /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:
<https://k2-systems.com/en-us/resource-center/download-library/> 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.
- /If all safety instructions are adhered to and the system is correctly installed, there is a product warranty entitlement of 25 years! We strongly recommend reviewing our terms of guarantee, which can be viewed at <https://k2-systems.com/en-us/resource-center/download-library/> 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 MiniRail Comp can be installed as standard under the following conditions. Even if the system is capable of meeting higher demands through the integration of safety standards, please get in touch with your contact at K2 Systems if the specified values are exceeded.



Roof requirements

/The sufficient holding force of the roof covering at the support or substructure must be ensured on site.

/Roof pitch: 5 - 75°

/Maximum roof height: 30ft

/Minimum roof deck thickness: 7/16" OSB

/A thermal expansion gap is required for a continuous length of modules after 65ft.

/Distance between two assembled rails must be at least 10 mm

/A .25-.75" thermal gap is required between separate rows or columns of modules that are not interconnected with clamps

Structural requirements

The static verification of the component is automatically calculated with the K2 Base planning software for the respective location. The design provided in a project report must be followed.



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). Country-specific regulations must be observed.

/Ensure mounting rail locations are approved by module manufacturer.

Bonding and Grounding



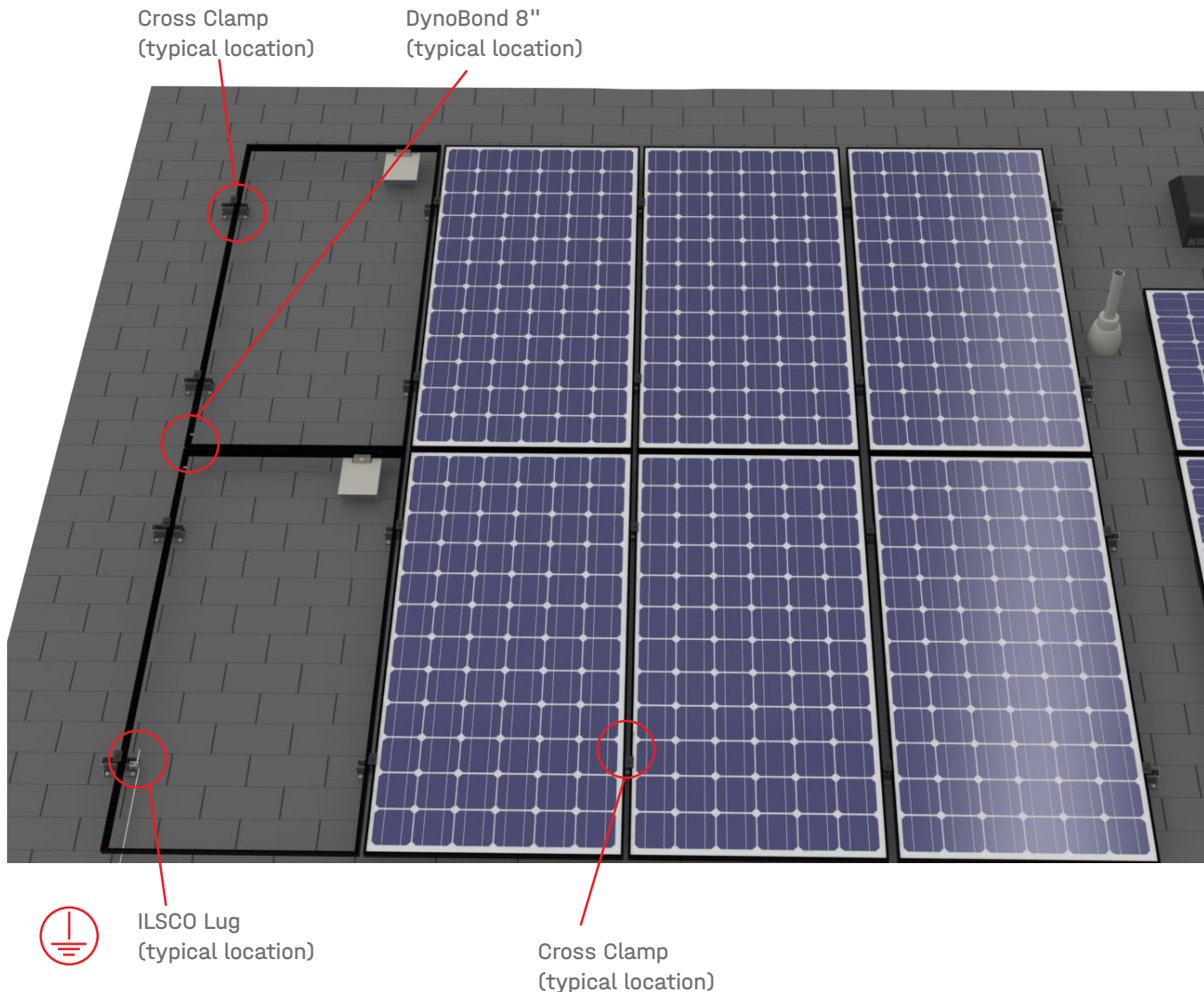
Appropriate means of bonding and grounding are required by regulation. The information provided in this manual shall always be verified with local and national building codes.

K2 Systems has obtained a UL 2703 system listing from Underwriter's Laboratories (UL).

A sample bonding path diagram is shown in Figure 1 below. Your specific installation may vary, based upon site conditions and your AHJ's requirements.

Each electrical connection has been evaluated to a maximum fuse rating of 30A. When installing modules in portrait orientation, one ground lug under each row of modules must be installed to ground all equipment. When installing modules in landscape, use one ground lug under each column of modules. It is also adequate to install only one ground lug at each sub-array while using one DynoBond between each module row or column that is not connected by mid clamps. When installed per these installation instructions, all connections meet the requirements of NEC 690.43.

This racking system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

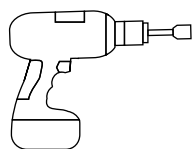


Approved Modules

To view our list of compatible modules, please click this link or scan the QR code: <https://k2-systems.com/wp-content/uploads/2023/04/Approved-Modules-EN-US.pdf>



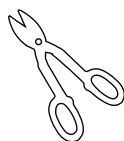
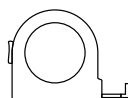
Tools Overview



13mm socket
7/16" socket
5/16" socket

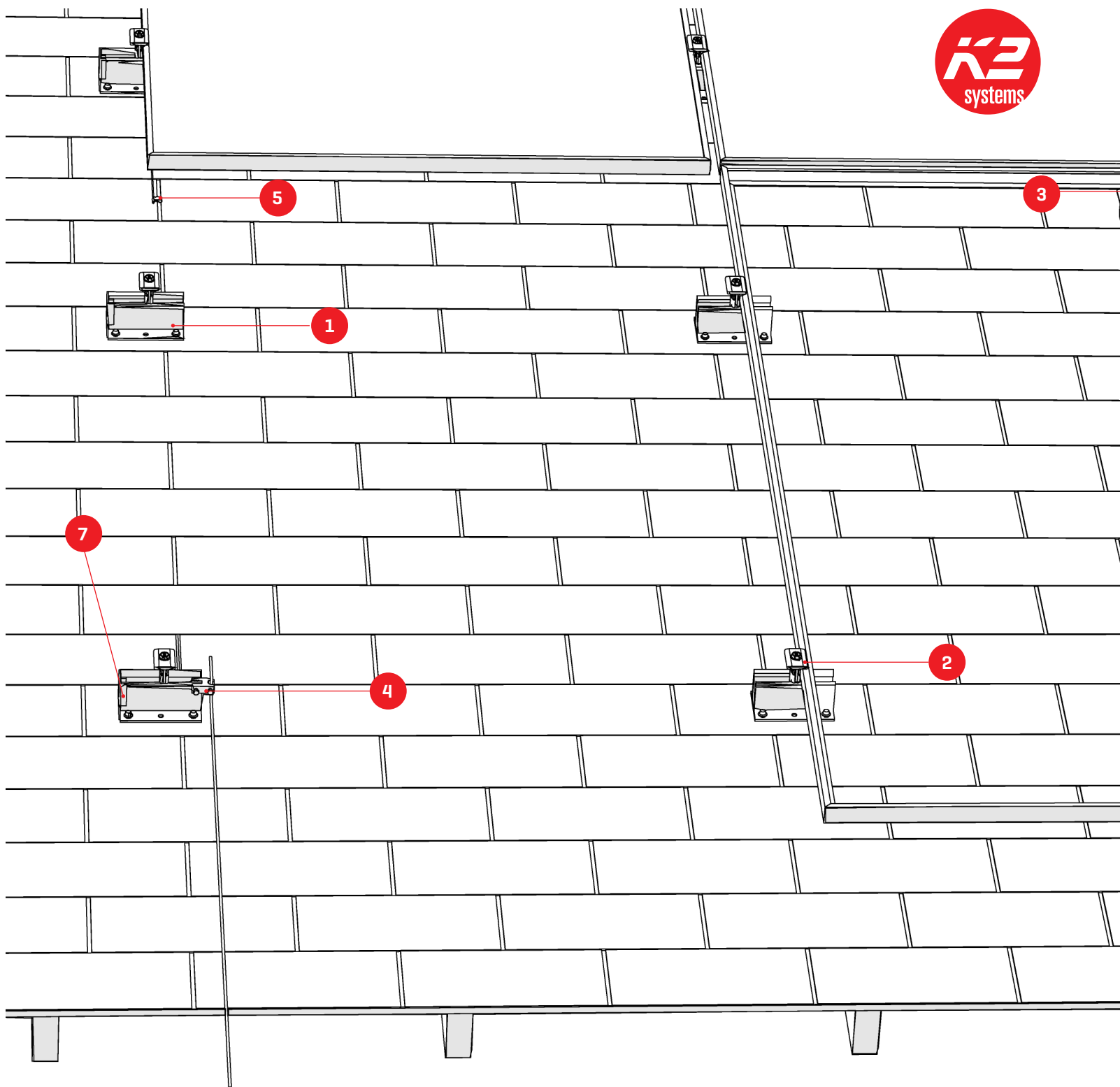


3.9 - 20.3 Nm
(2.9 - 15 ft-lbs)

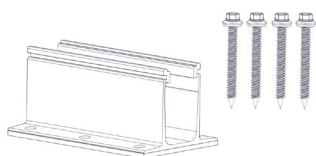


Torque Overview

- ▶ MLPE, Module Frame Mount, Kit: 15 ft-lbs (20.3Nm)
- ▶ Yeti Clamp 2.0: 12 ft-lbs (16.3Nm)
- ▶ Ilsco Lug Mounting Bolt: 6.2 ft-lbs (8.4Nm), Terminal Bolt: 2.9 ft-lbs (3.9Nm)
- ▶ K2 Cross Clamp Hex Head M8×50mm: 12 ft-lbs (16.3Nm)
- ▶ #14 Self-tapping wood screws: Torque until EPDM washer starts to compress.

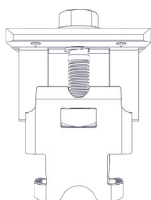


1 4000246



K2 MiniRail Comp 2.0 Kit,
Dark

2 40000145



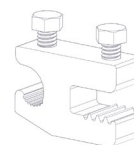
K2 Cross Clamp Set, Dark

3 40000083

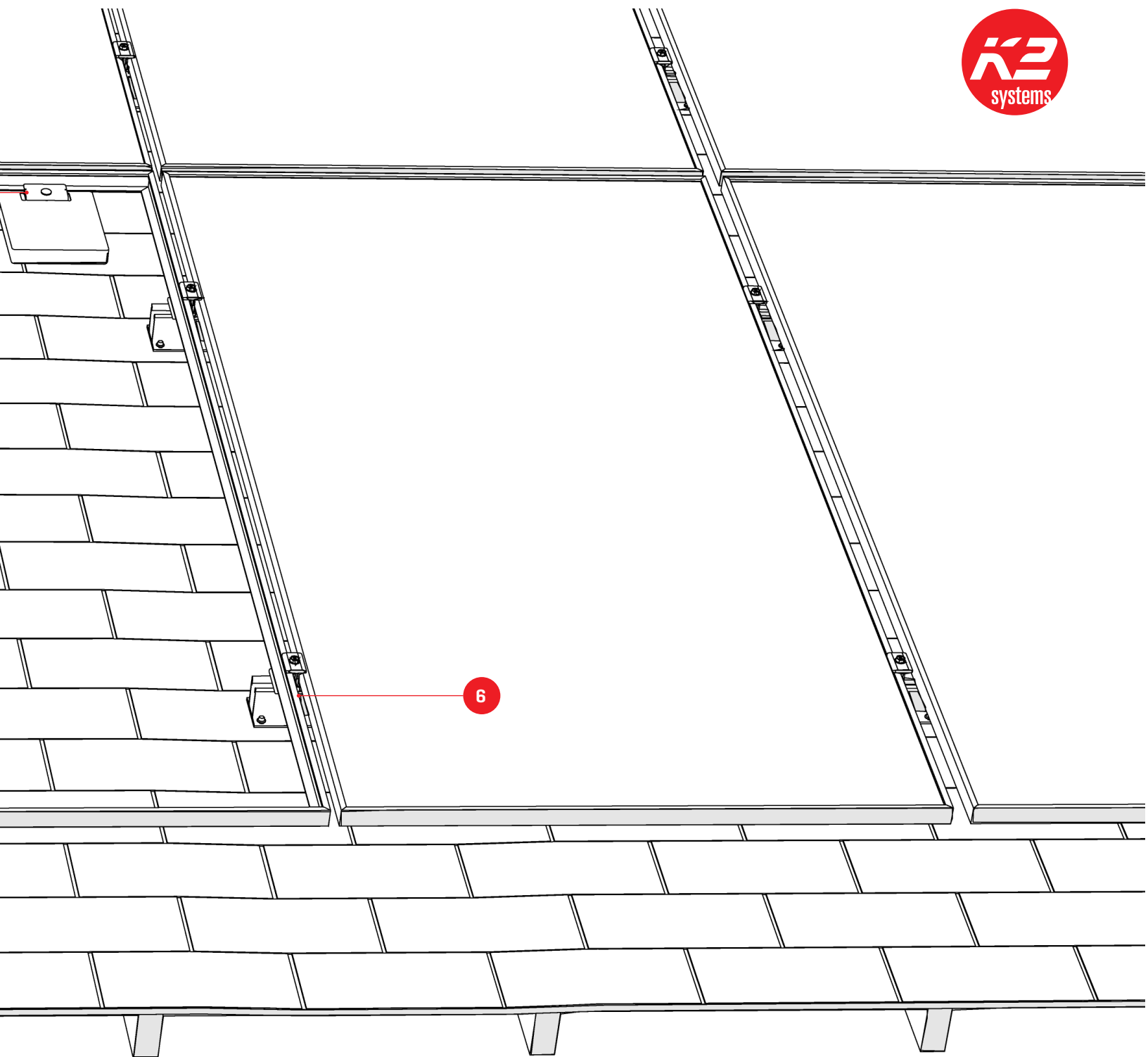


MLPE, Module Frame
Mount, Kit

4 4000960



ILSCO Lug, SGB-4

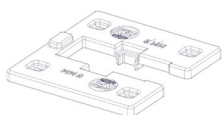


5 4000354



Dynobond 8"

6 4000303



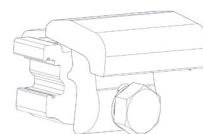
K2 Module Leveling
Block, 5mm

7 4000250



MiniRail Cap

8 4000050-B

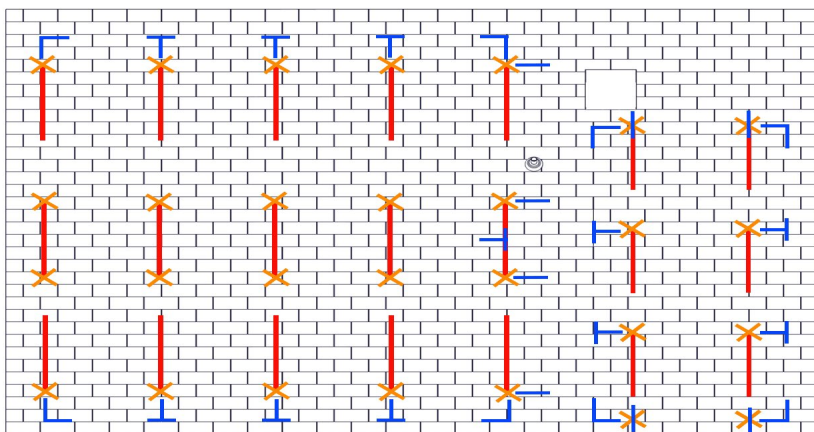


Yeti Clamp 2.0, Set

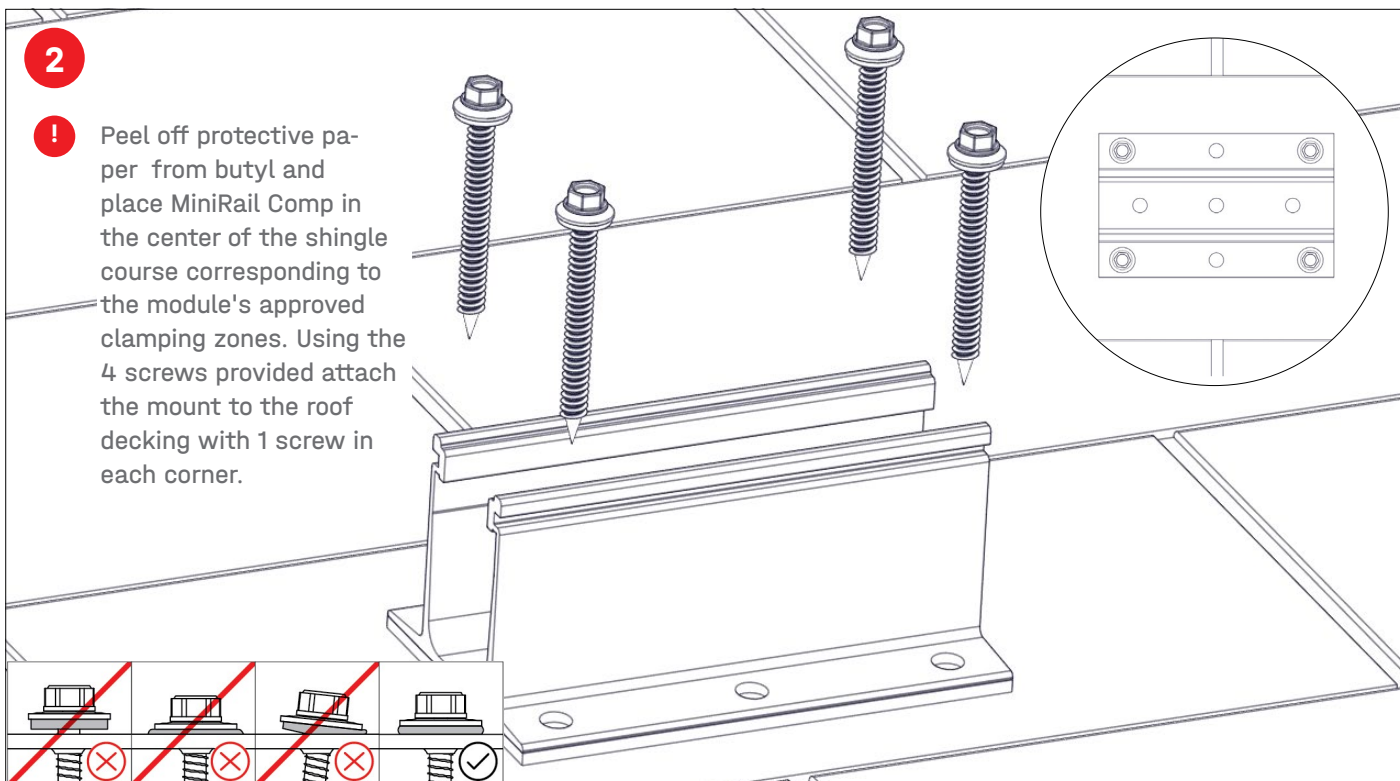
Composition Shingle Roofs

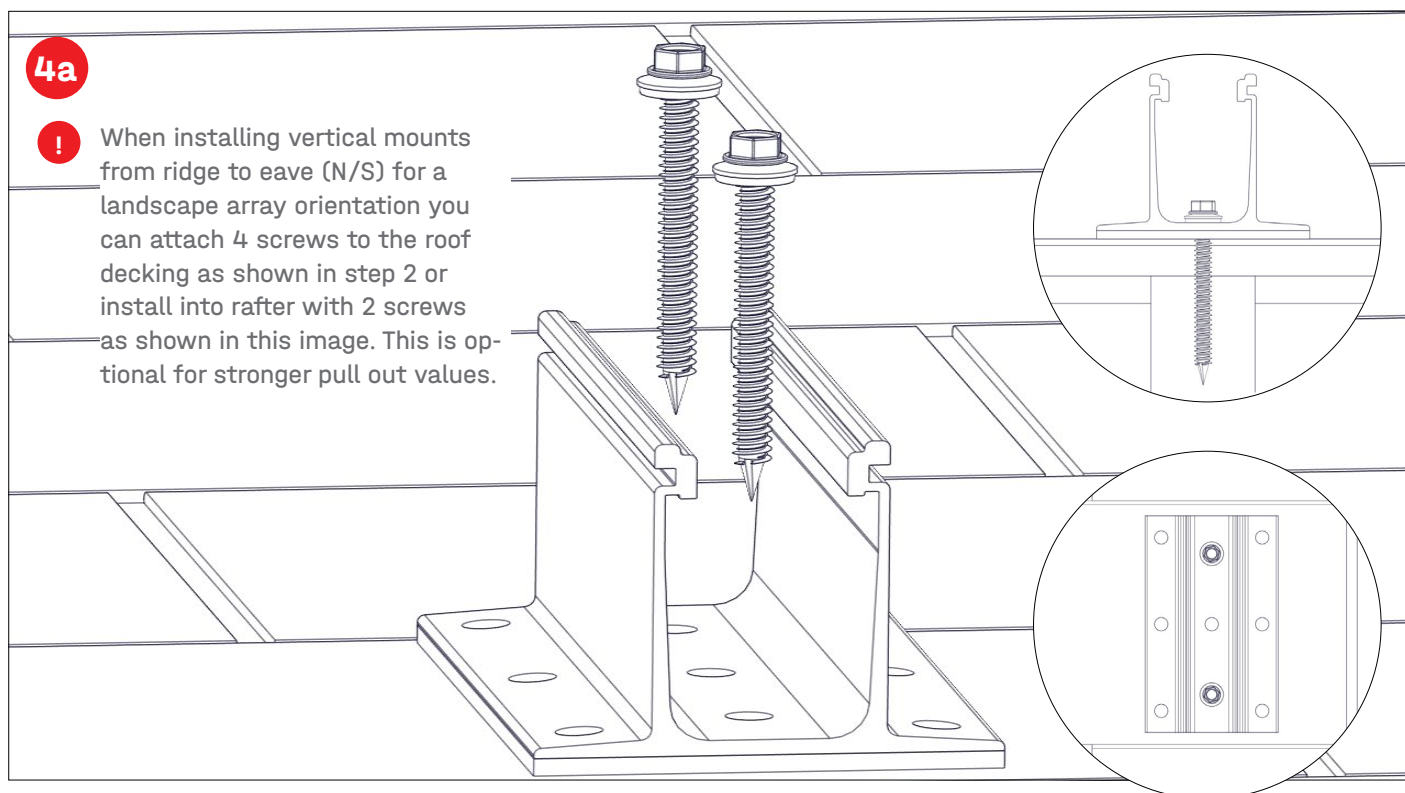
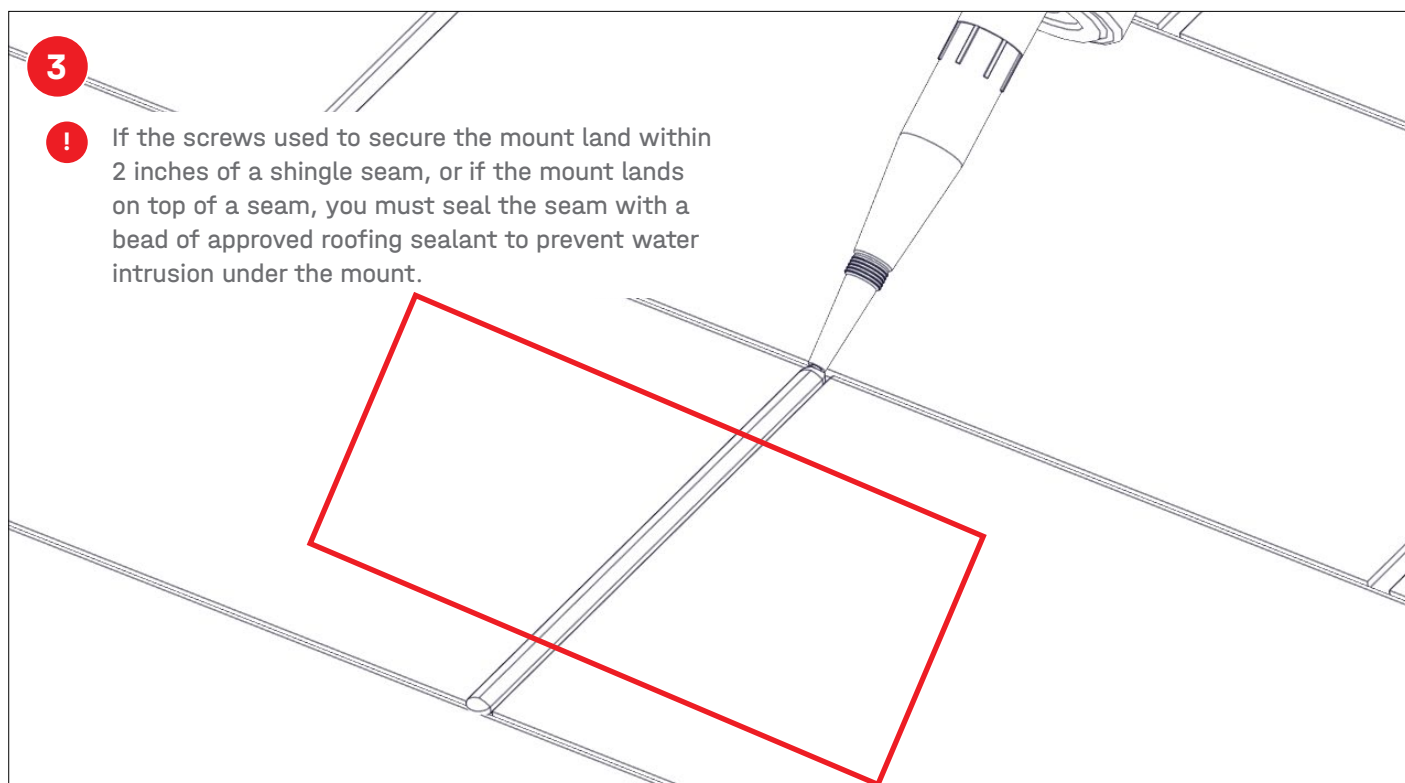
- 1 For portrait module orientation, mark the outer corners, the separation of individual rows, and each side by side module intersection at the top and bottom of the array. At module intersections, factor in $+.67''$ to account for mid clamps between modules. At intersection of separate rows, factor in $+.25-.75''$ of thermal gap. Next, measure in from the top and bottom module edges to mark the shingle courses for installing 2 rows of MiniRails per row of modules. Refer to module manufacturer for approved clamping zone measurement. Strike chalk lines between the module intersection marks to center MiniRails between modules.

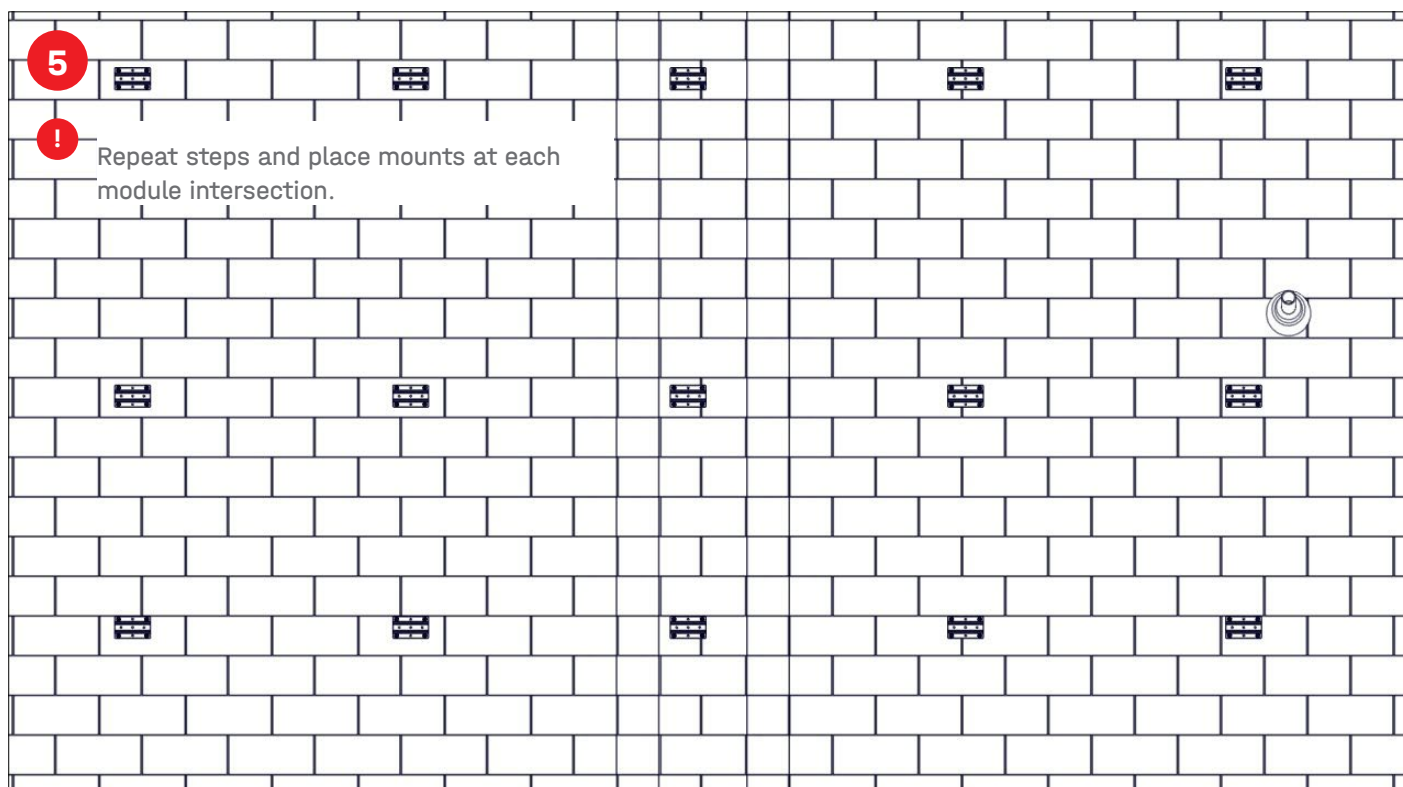
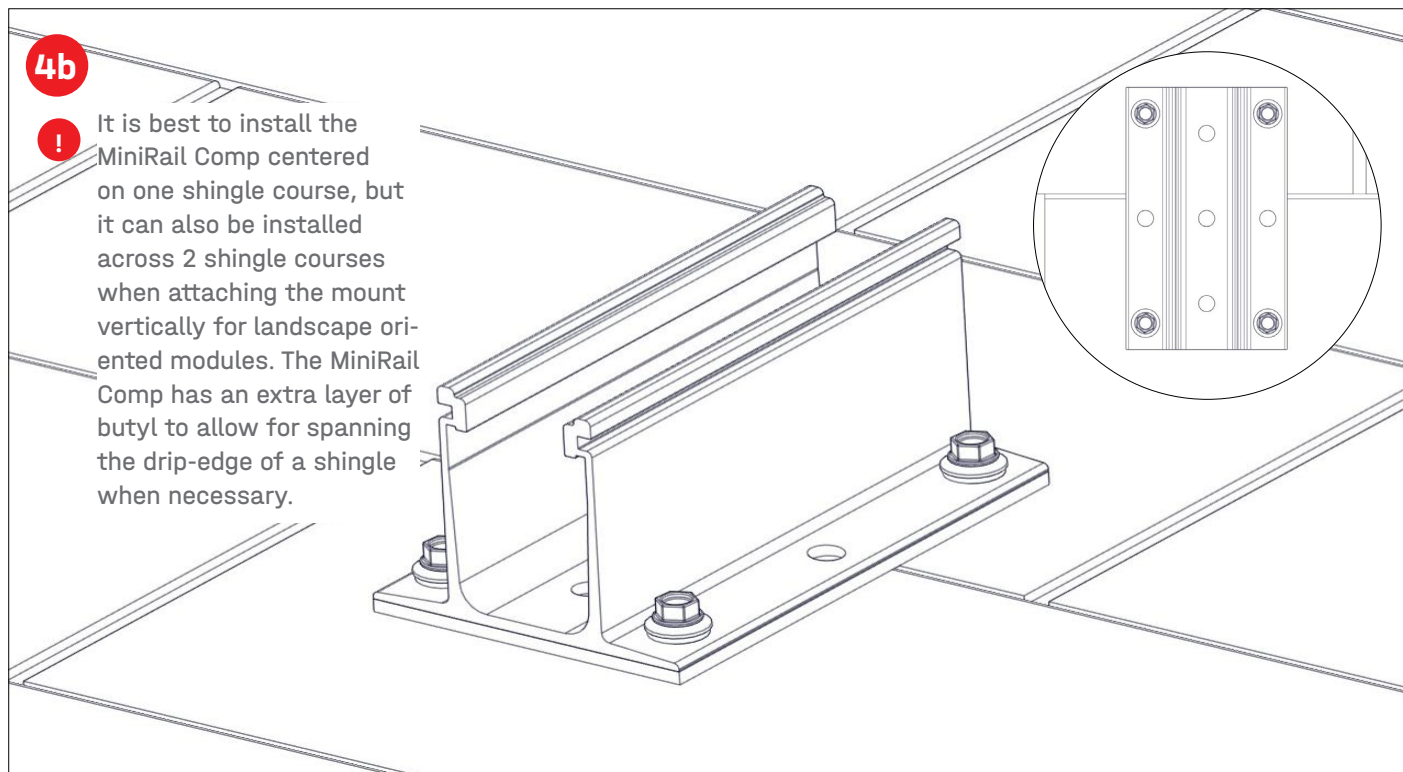
For landscape module orientation, mark the outer corners, the separation of individual columns, and each module intersection going from eave to ridge. Add $+.67''$ for mid clamps between module, and $+.25-.75''$ thermal gap between separate columns. At the top and bottom of the array, measure in from the left and right module edges to mark 2 columns of MiniRails per column of modules. Then strike lines between top and bottom marks. Refer to module manufacturer approved clamping zone measurement. Use module intersection marks to align rows of MiniRails across the correct shingle course.

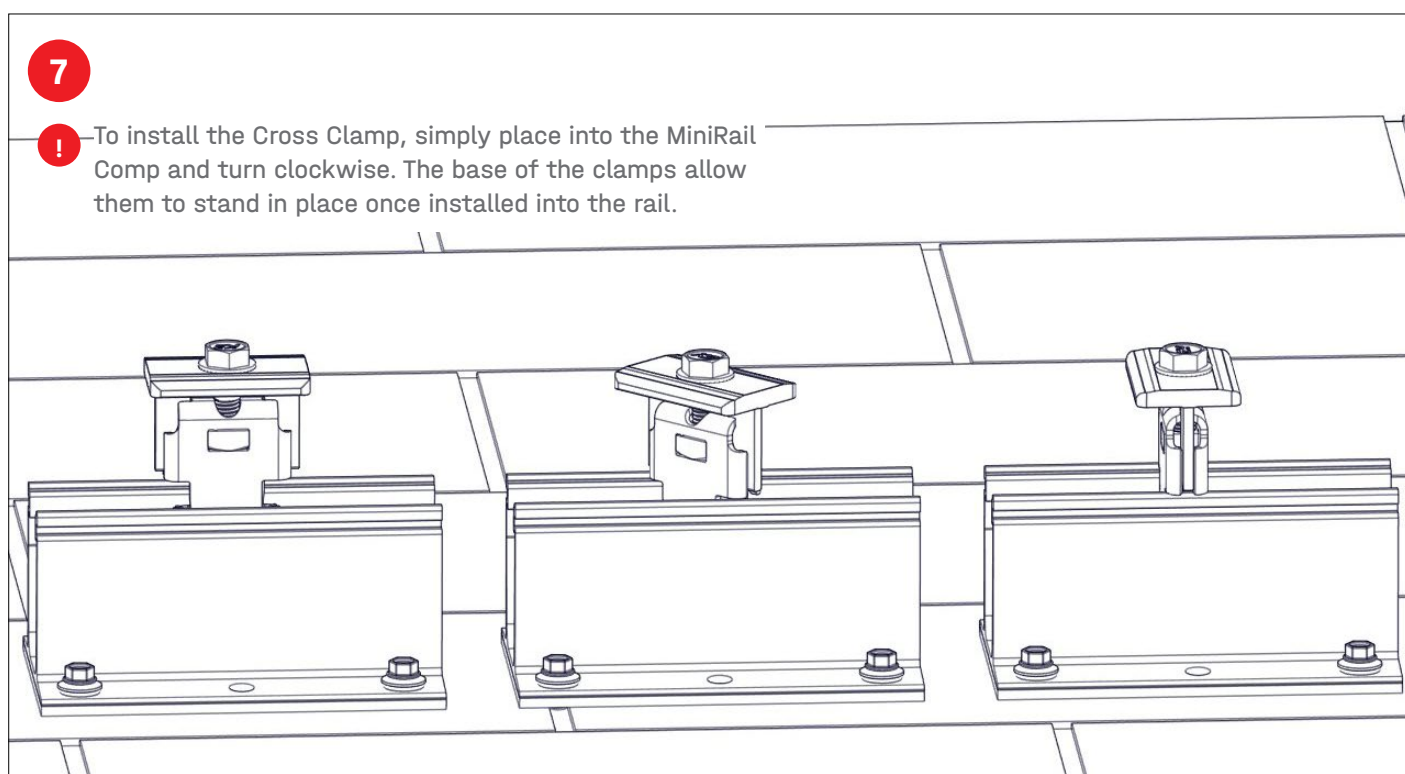
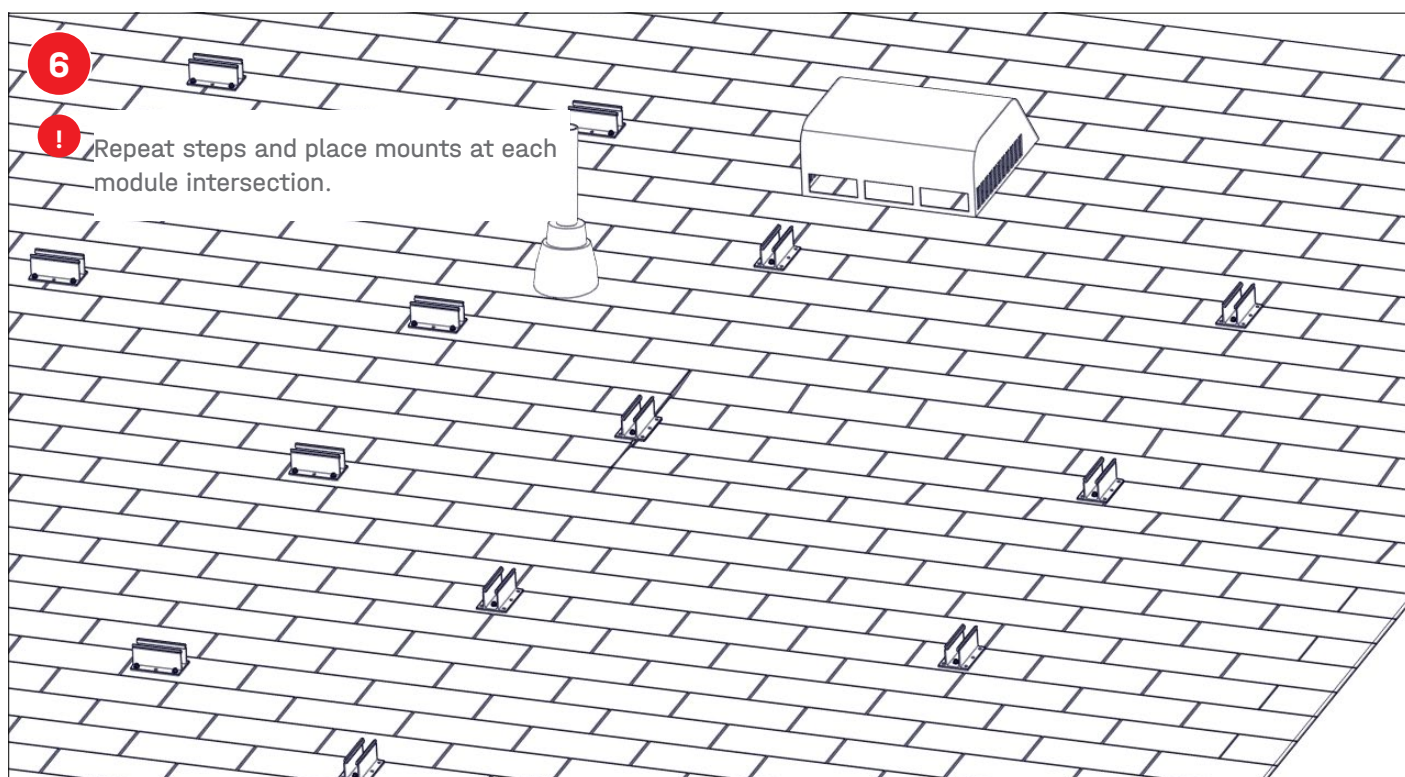


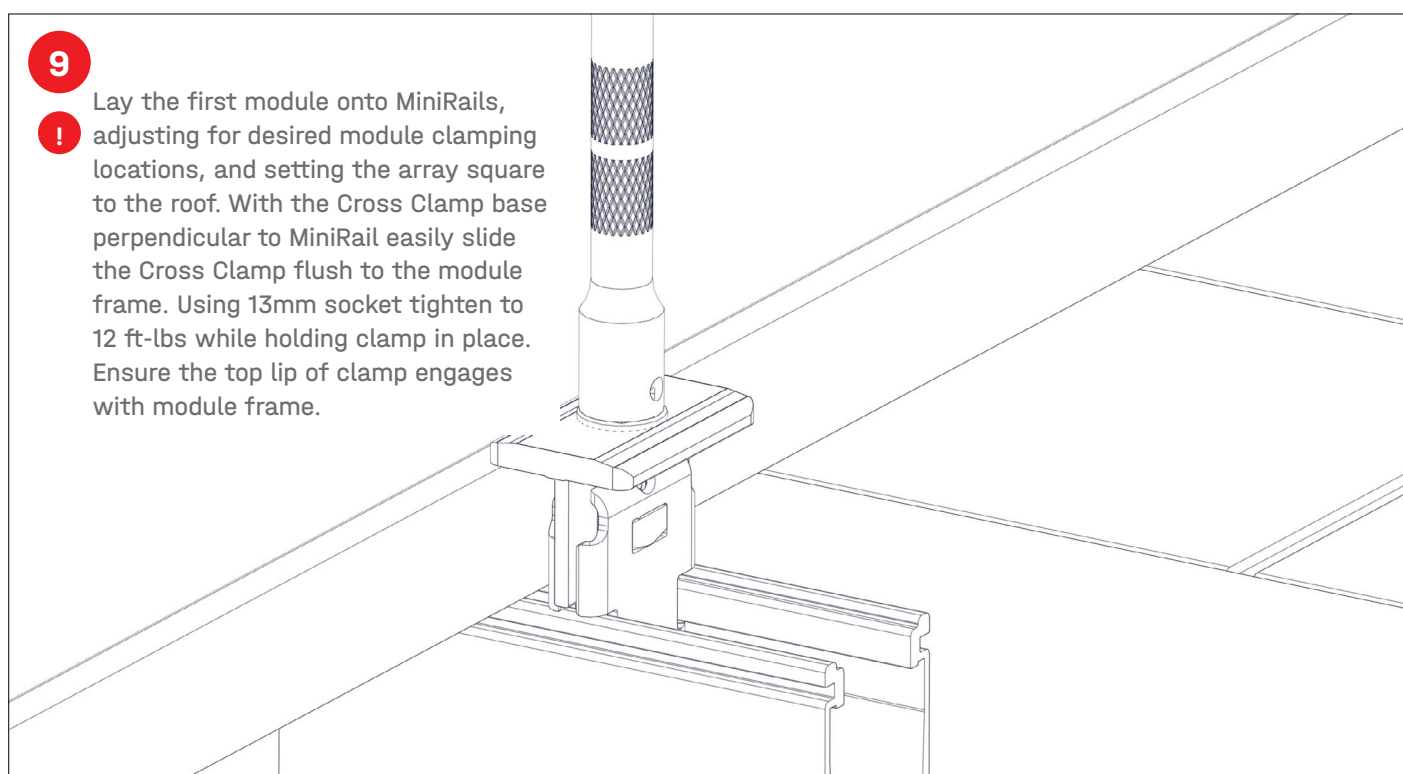
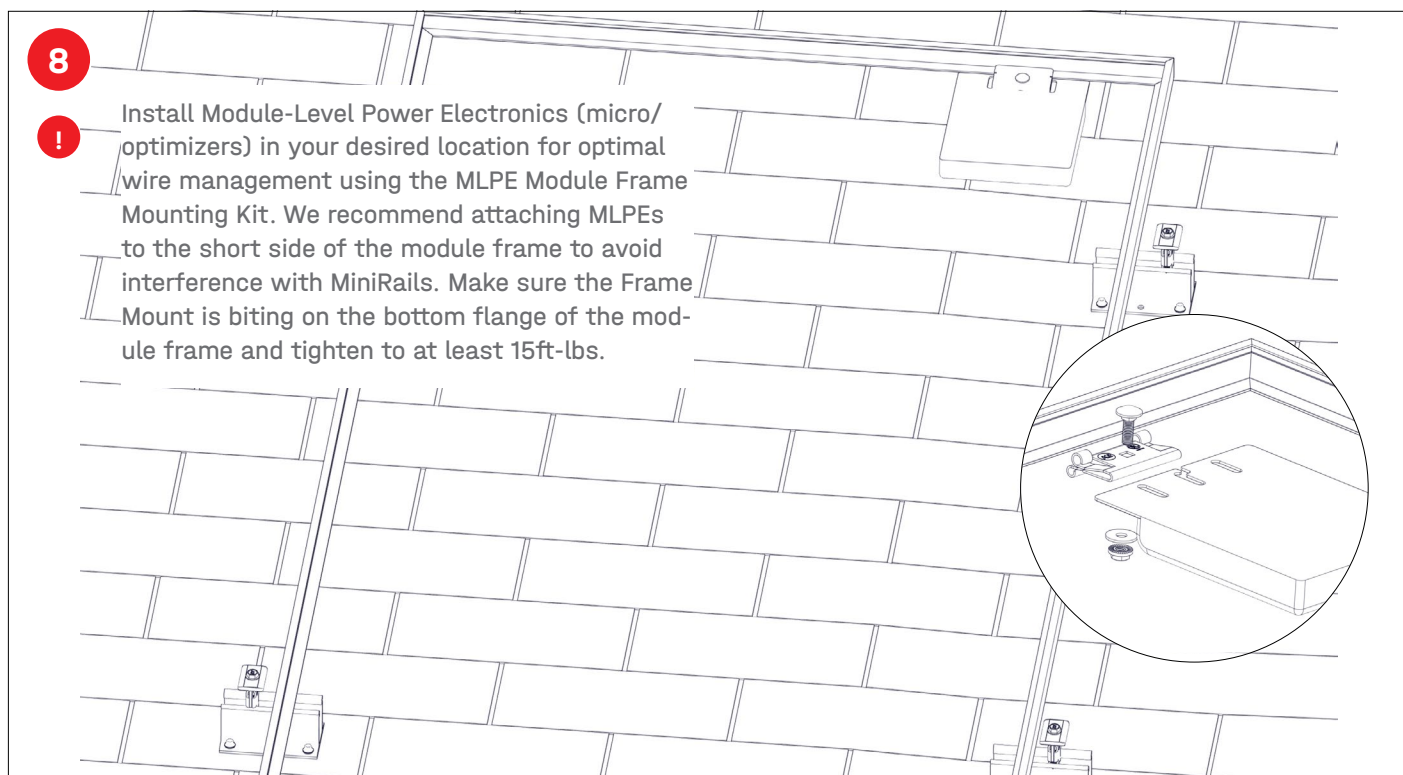
- 2 Peel off protective paper from butyl and place MiniRail Comp in the center of the shingle course corresponding to the module's approved clamping zones. Using the 4 screws provided attach the mount to the roof decking with 1 screw in each corner.





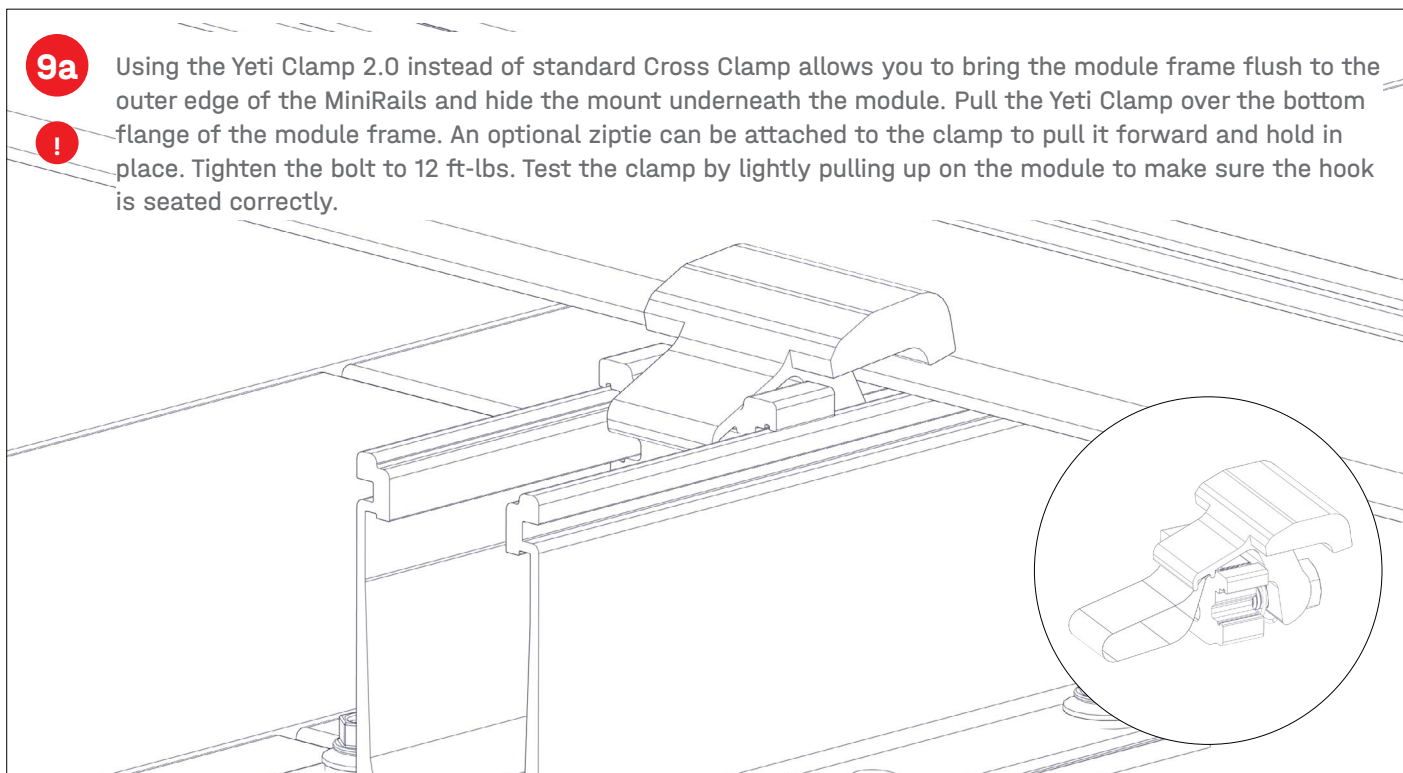






9a

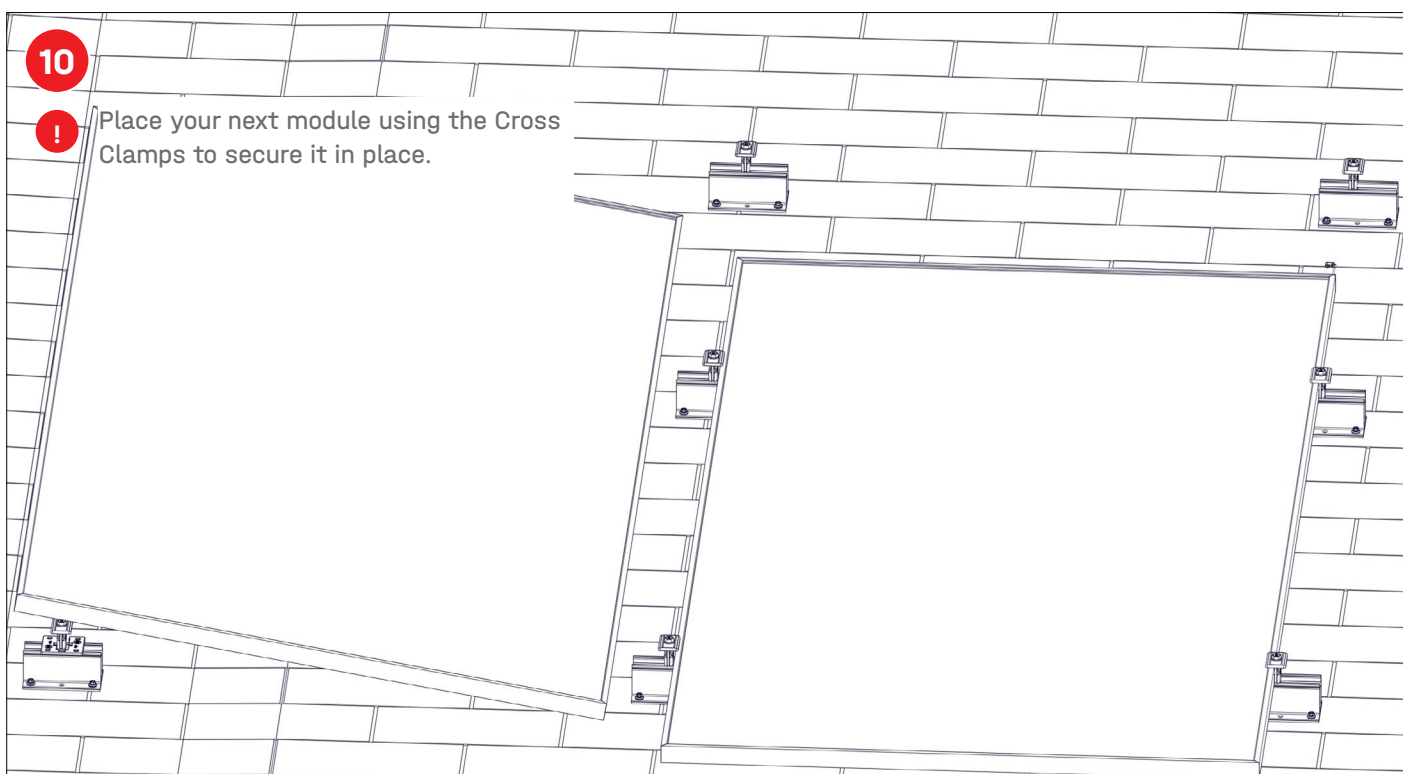
Using the Yeti Clamp 2.0 instead of standard Cross Clamp allows you to bring the module frame flush to the outer edge of the MiniRails and hide the mount underneath the module. Pull the Yeti Clamp over the bottom flange of the module frame. An optional ziptie can be attached to the clamp to pull it forward and hold in place. Tighten the bolt to 12 ft-lbs. Test the clamp by lightly pulling up on the module to make sure the hook is seated correctly.



10



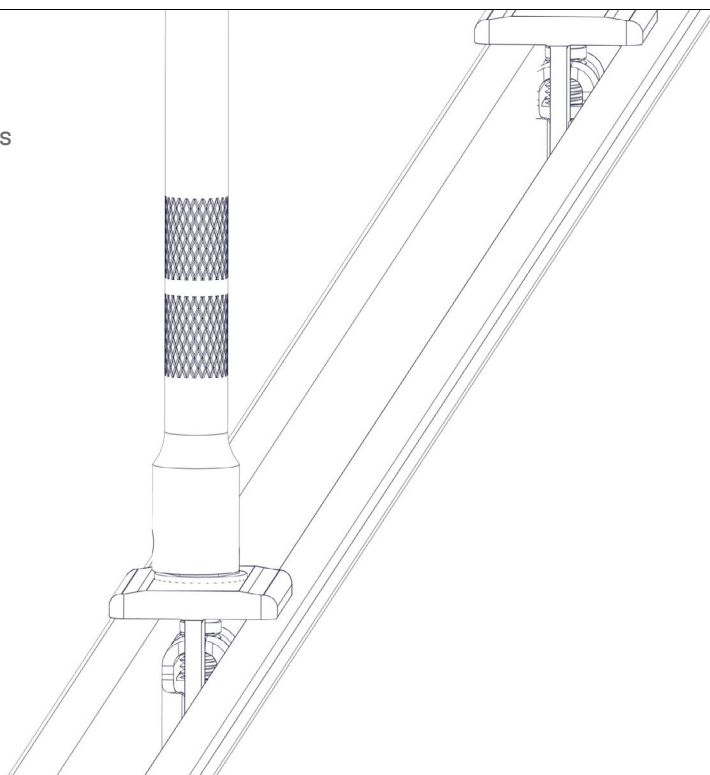
Place your next module using the Cross Clamps to secure it in place.



11



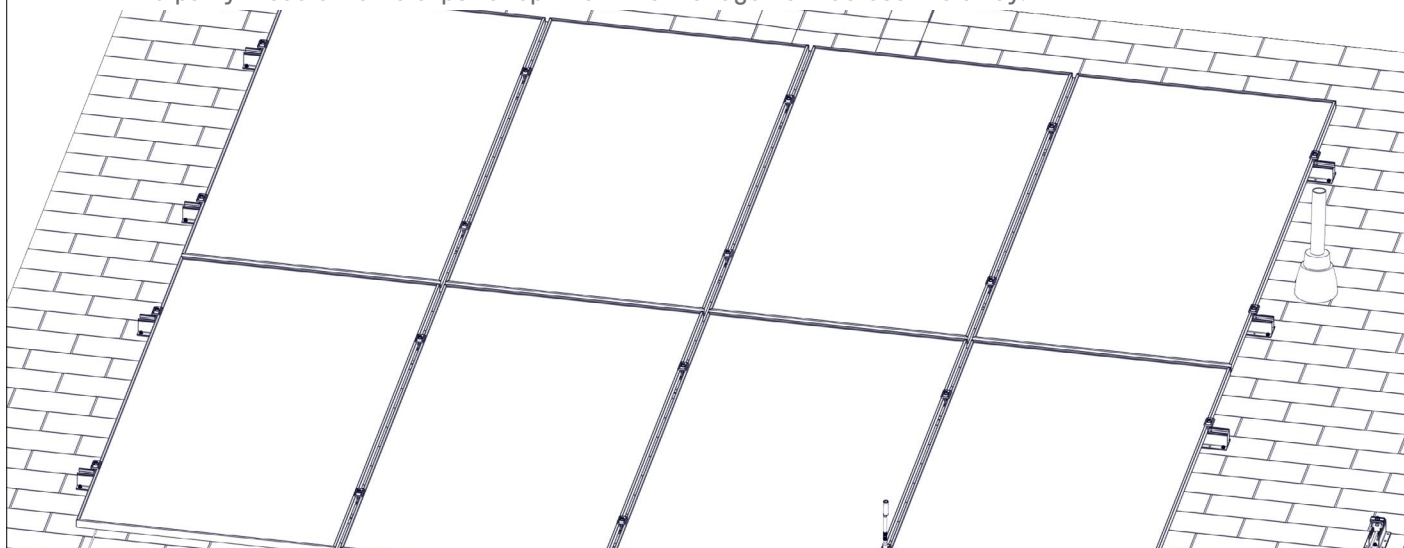
Make sure the module frames are flush to the Cross Clamp base and tighten to 12 ft-lbs.



12



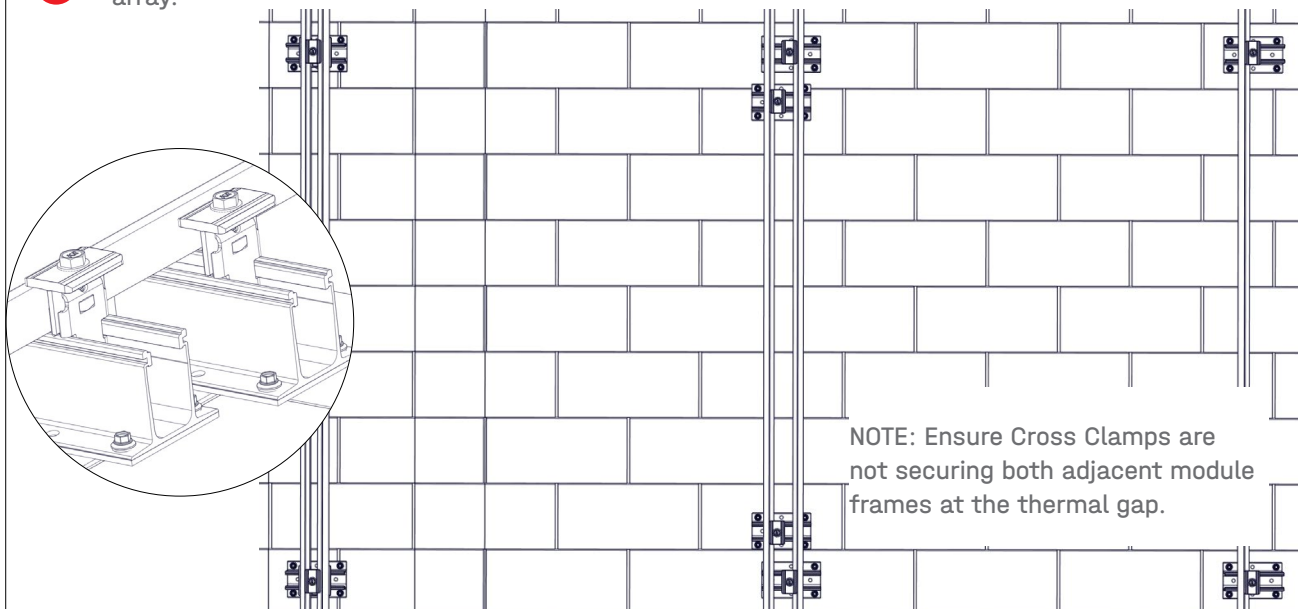
Lay down modules one row at a time while managing wires simultaneously. For DC systems it is easiest to plan out the homeruns ahead of time and lay them on the roof where they will connect under the first and last module in your strings. For microinverter systems it is easiest to plan out where the trunk cable plugs will connect and lay them on the roof prior to settling modules. Use third party module frame clips for optimal wire management across the array.



13

When module rows exceed 65 ft you will need to create a thermal gap due to expansion and contraction of the metal materials. To create a gap you can add in an extra roof attachment directly above or below where the gap will sit between modules. Use Cross Clamp as an end clamp to break up the two sections of the array.

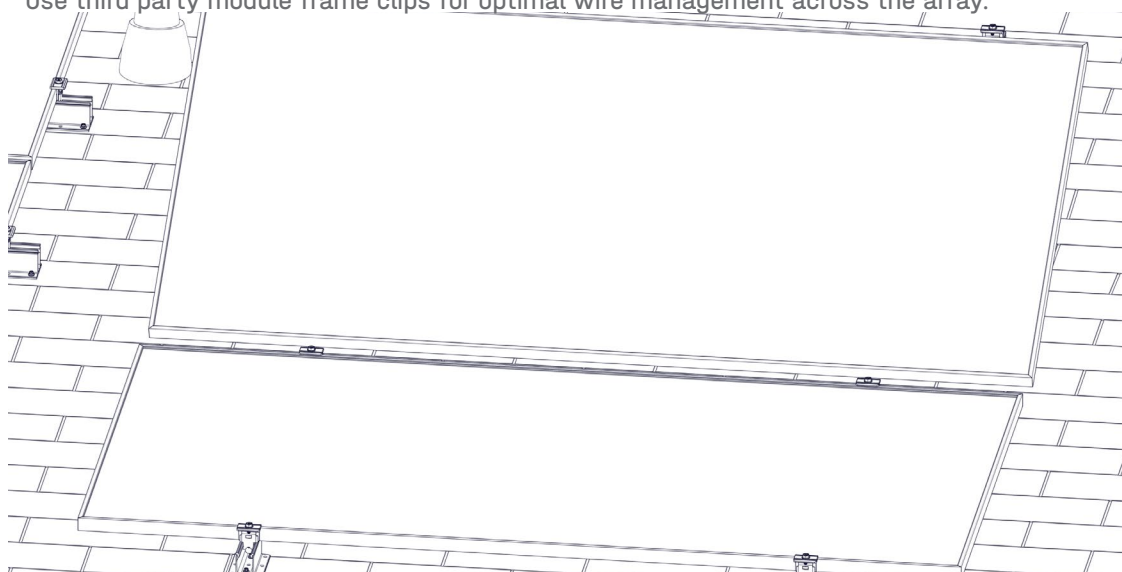
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14

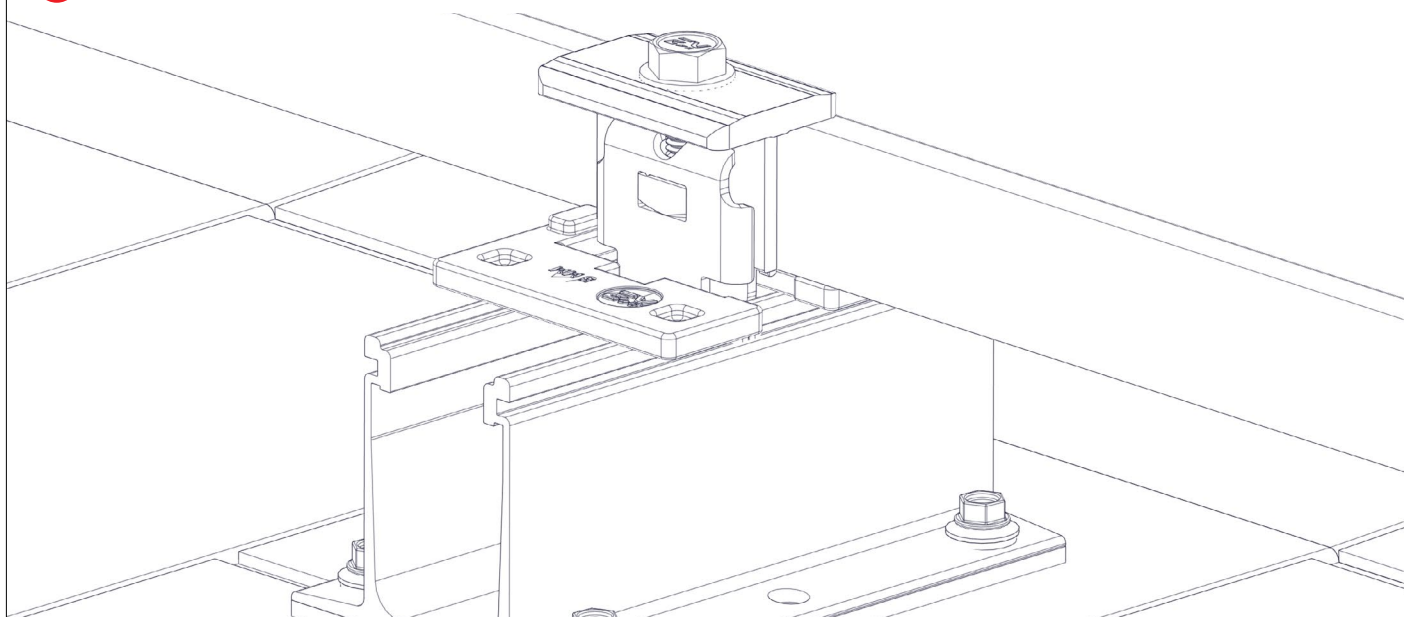
Landscape Example: Lay down modules one row at a time while managing wires simultaneously. For DC systems it is easiest to plan out the homeruns ahead of time and lay them on the roof where they will connect under the first and last module in your strings. For microinverter systems it is easiest to plan out where the trunk cable plugs will connect and lay them on the roof prior to settling modules. Use third party module frame clips for optimal wire management across the array.

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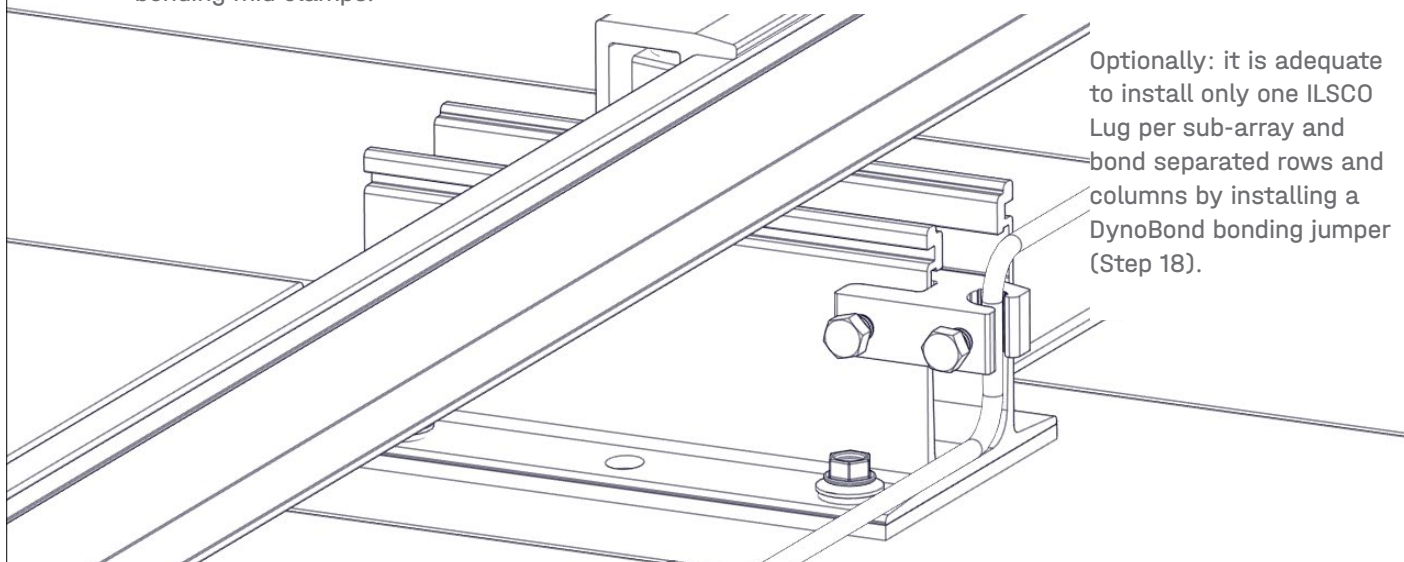
15

Optional Module Leveling Blocks of 5mm can be placed around the Cross Clamp to level out your array. Module Leveling Blocks are stackable up to 20mm.



16

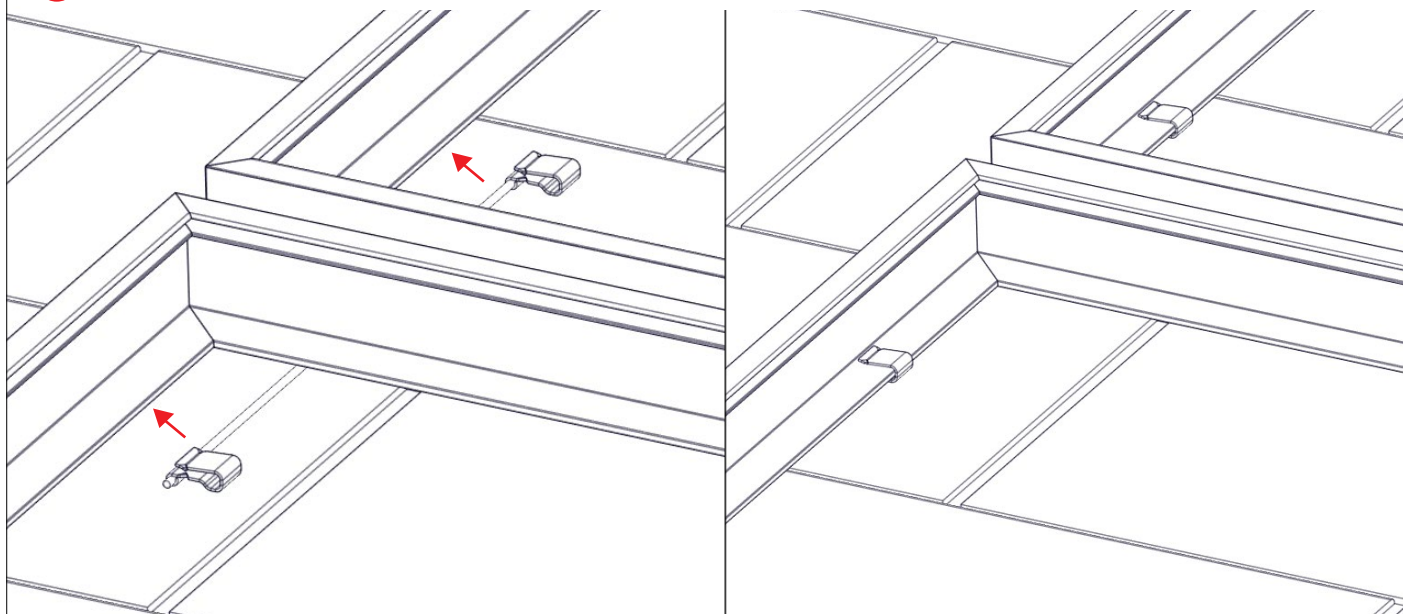
To ground your array attach an ILSCO Lug to a MiniRail Comp mount. Attach the serrated side of the ILSCO Lug to the side of the MiniRail Comp and tighten to 6.2 ft-lbs. Install equipment grounding conductor wire of bare copper or stripped section of insulated copper on the terminal screw side of the lug and tighten to 2.9 ft-lbs. Continue installing the ILSCO lugs and connecting the equipment grounding conductor with one lug installed under each row or column of modules not connected by bonding mid clamps.



Optionally: it is adequate to install only one ILSCO Lug per sub-array and bond separated rows and columns by installing a DynoBond bonding jumper (Step 18).

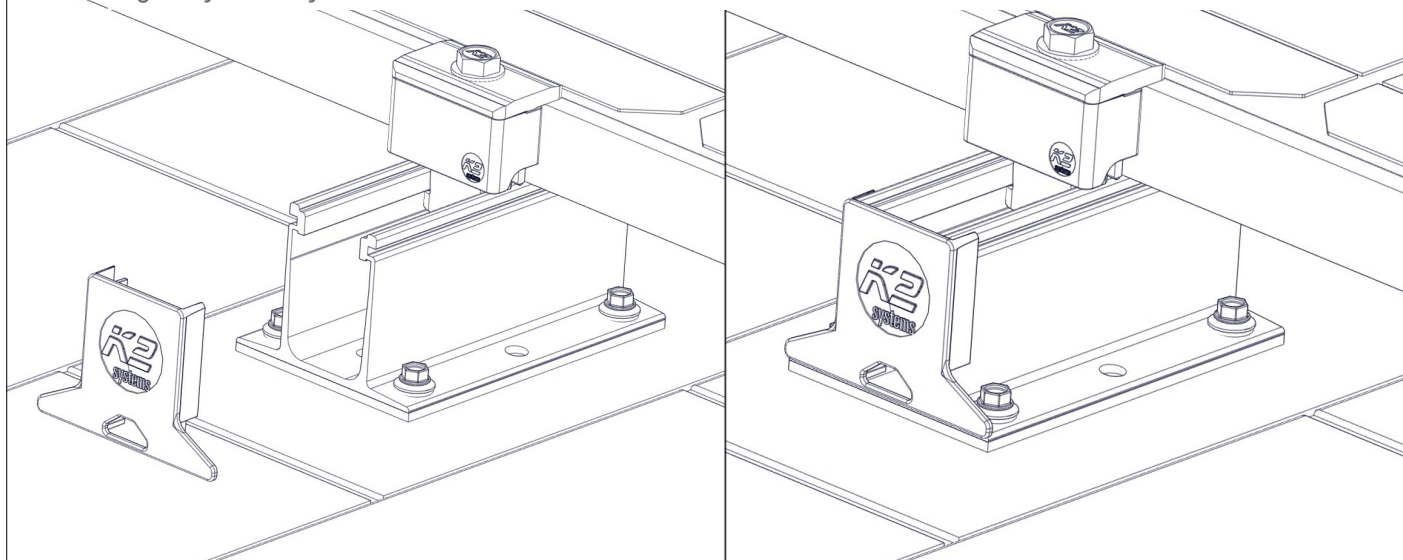
17

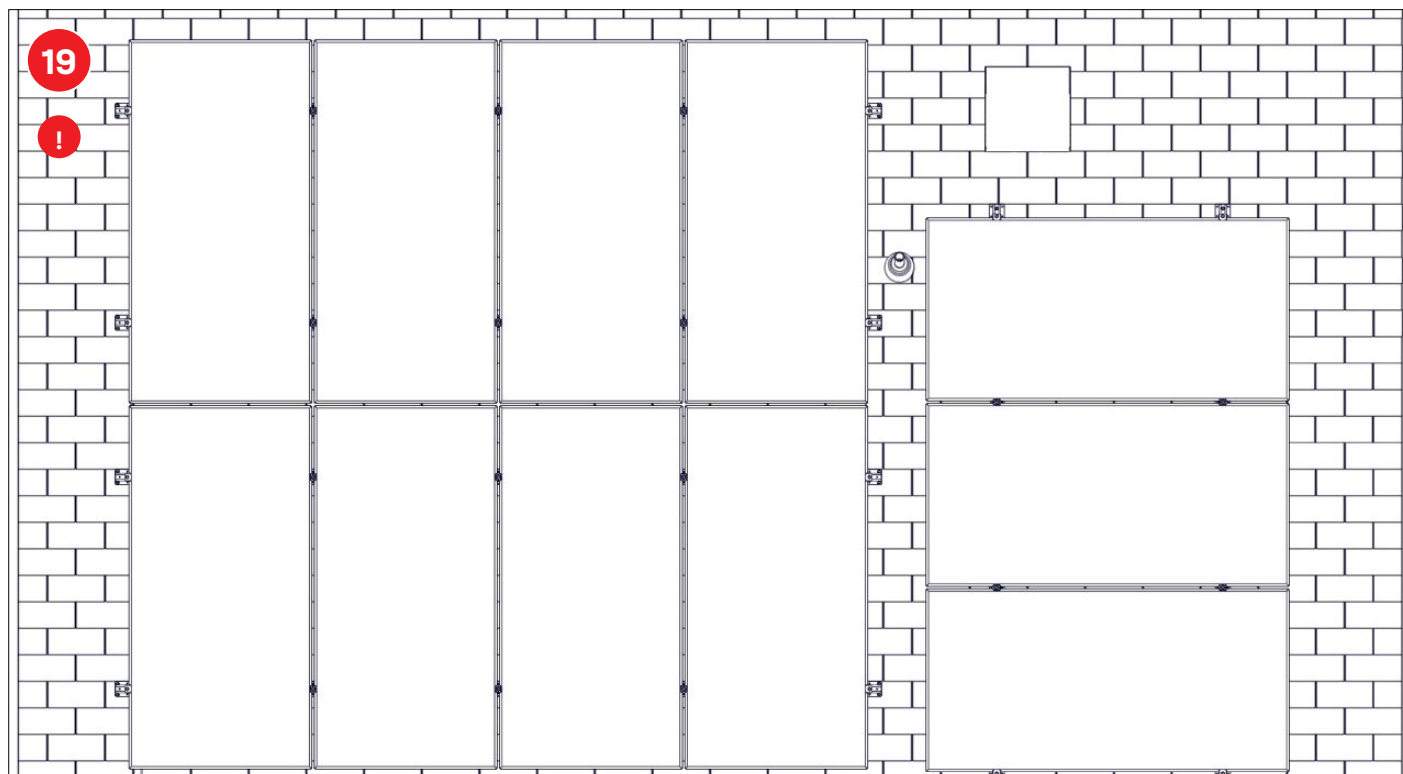
Cross Clamps are bonding clamps according to UL 2703. To bond rows and columns that are not connected by mid clamps they can be bonded by installing one DynoBond bonding jumper between the separate rows or columns.

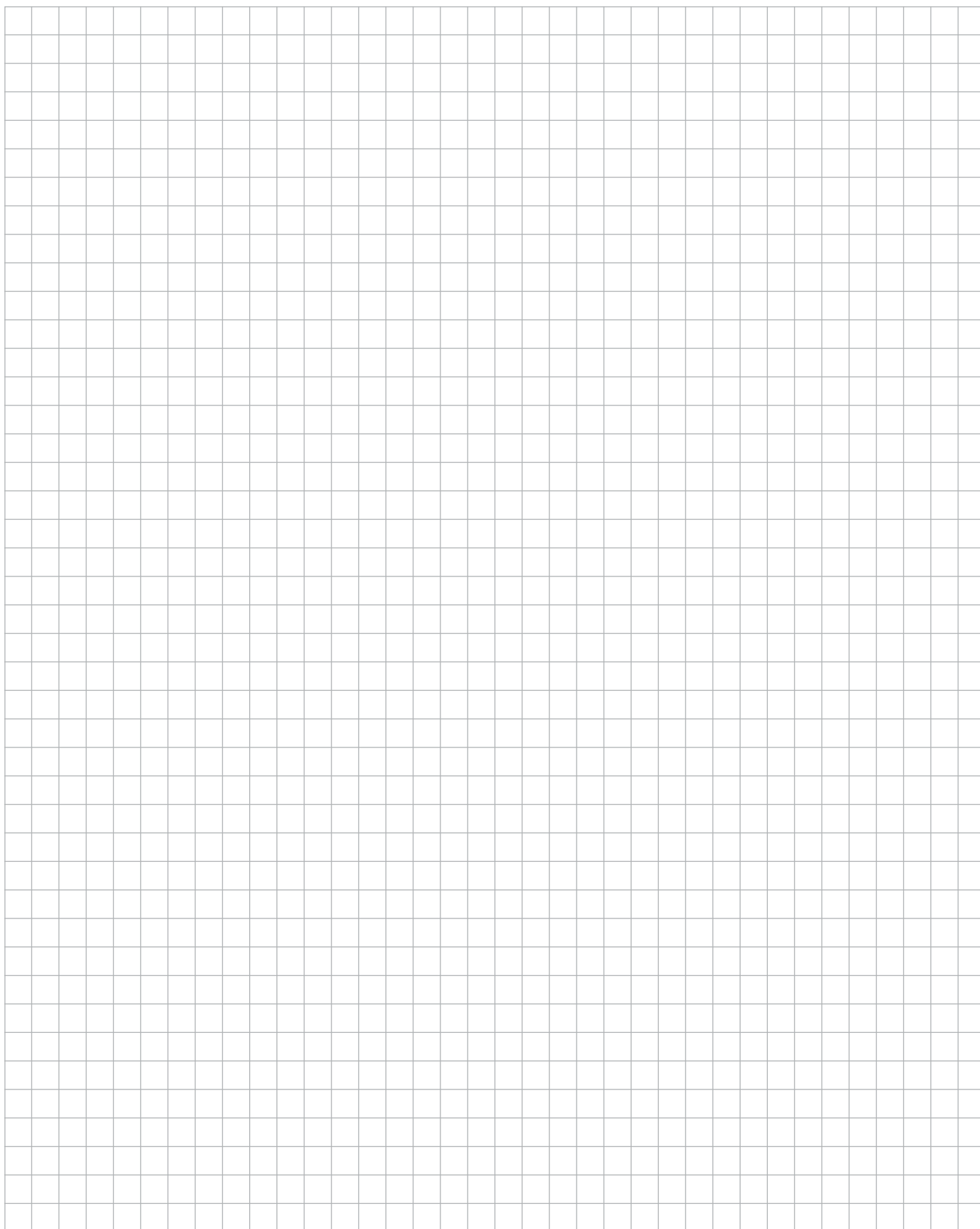


18

The MiniRail Cap can be installed for a clean finished look. To secure the cap, simply align tabs on the cap with sidewalls of the MiniRail Comp and push until cap sits flush. Push Cross Cap onto Cross Clamp until tabs click into place. Cap should align with the top of the Cross Clamp. This will give the edge of your array a clean finished look.







Notes

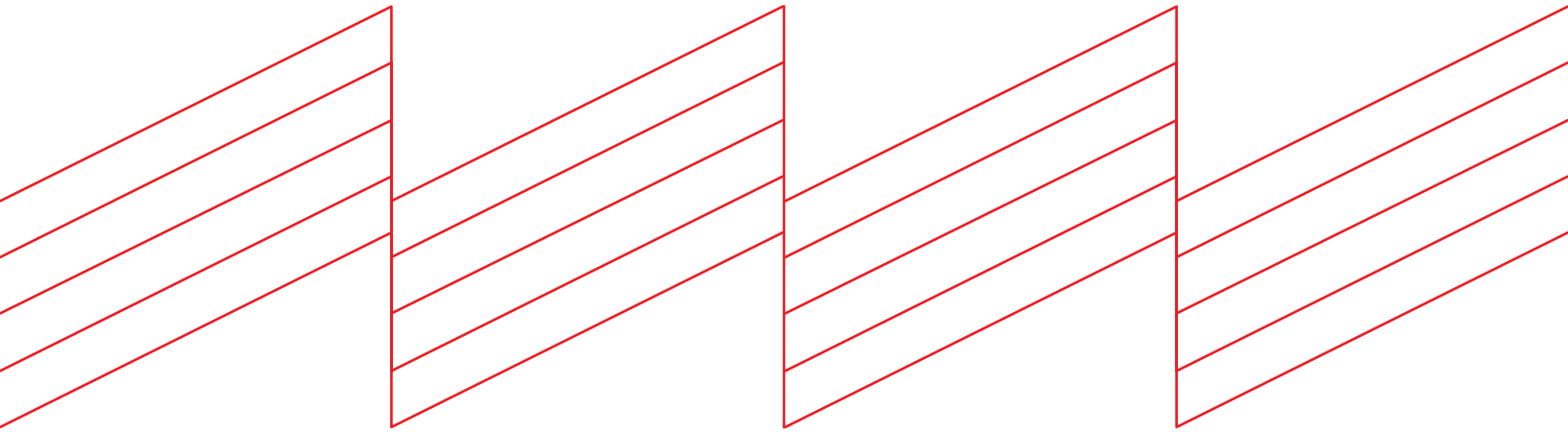


Notes





Connecting Strength



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MiniRail Comp Assembly Instructions V1 | 0424 • Subject to change
Product illustrations are exemplary and may differ from the original.

Everest Solar Systems S de RL de CV

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