We support PV systems
Formerly Everest Solar Systems

MiniRail XPRess System

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:
k2-systems.com/en-US/company/quality-management-and-certificates

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 29 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/downloads/documentation

/ 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 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: https://k2-systems.com/en-US/downloads/documentation 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/downloads/documentation 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 XPRess System 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 structural integrity of the roof must be reviewed on site and approved by a licensed structural engineer.

/Maximum roof height: 30 ft

/Roof slope: 0º to 45º

/Minimum metal roof deck thickness: 26 gauge

Structural requirements

/Wind speed: 150 mph max

/Ground snow load: 60 psf max

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. Caution: module removal may disrupt the bonding path and could introduce the risk of electric shock. Additional steps may be required to maintain the bonding path. Modules should only be removed by qualified persons in compliance with the instruction manual.

In case of module removal, a temporary ground lug and wire will be required to attach to the module to maintain the bond path.

Each electrical connection has been evaluated to a maximum fuse rating of 30A. Every row of modules must be connected to at least one MiniRail XPRess Base having a ground lug, although additional may be used for redundancy. When installed per these installation instructions, all connections meet the requirements of NEC 690.43.

K2's MiniRail XPRess System was tested with modules listed on page 8.

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.

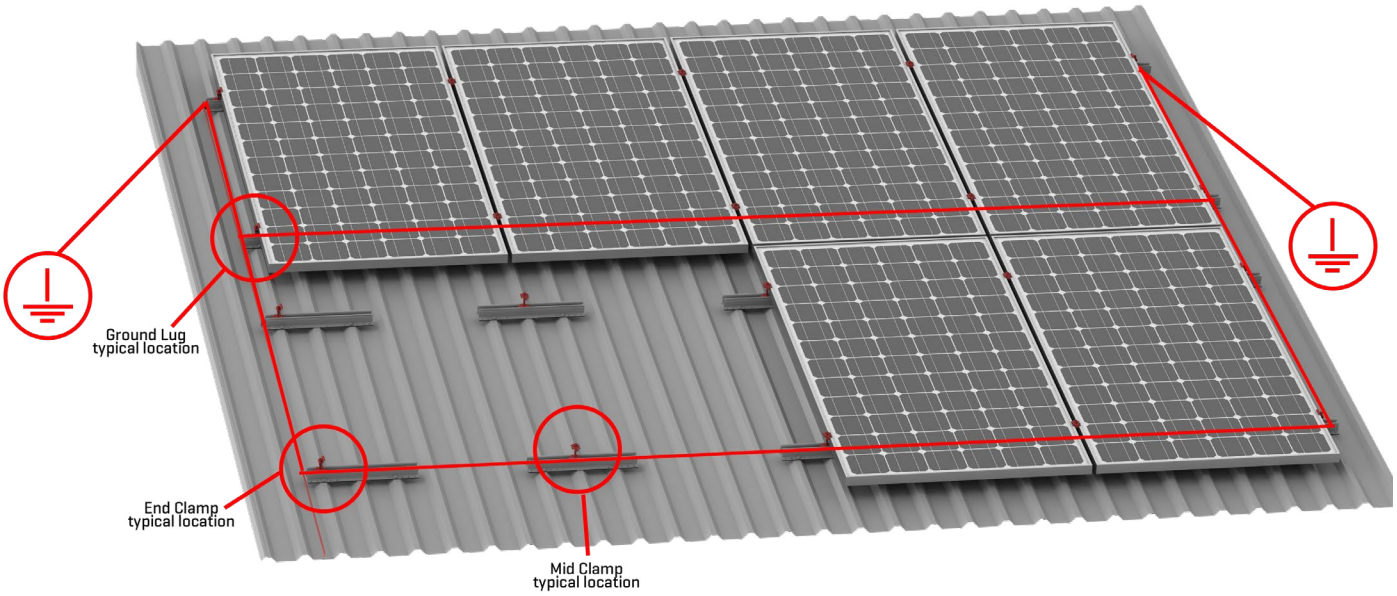


Figure 1: Bonding connections and bond path shown in red. For certain jurisdictions, bonding and grounding connections are identified at typical locations.

Fire Rating

The MiniRail XPRess System has undergone fire performance testing in accordance with UL 2703, Fire Performance. A System Class A fire rating is achieved when using MiniRail XPRess under the following conditions:

/Roof slope of 0º to 45º

/Used in combination with a UL 1703 Listed module with a fire performance rating of Type 1, Type 2, or Type 3. Consult the module manufacturer for specific fire performance rating information.

/CrossRail may be mounted using any stand-off height to maintain the Class A fire rating. Always consult the module manufacturer's installation instructions to ensure your installation is in compliance with their UL 1703 Listing.

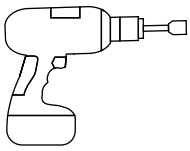
/The results of the racking system do not improve a roof covering Class rating.

All documentation can be found on UL's Online Database as well as K2 Systems' website.

Compatible Modules

To view all compatible modules scan this QR code

Tools Overview

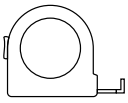


13mm

6 - 35 Nm
(4.5 - 22.2 lb-ft)

6mm

≥ 3.0 m



≥ 6.0 m

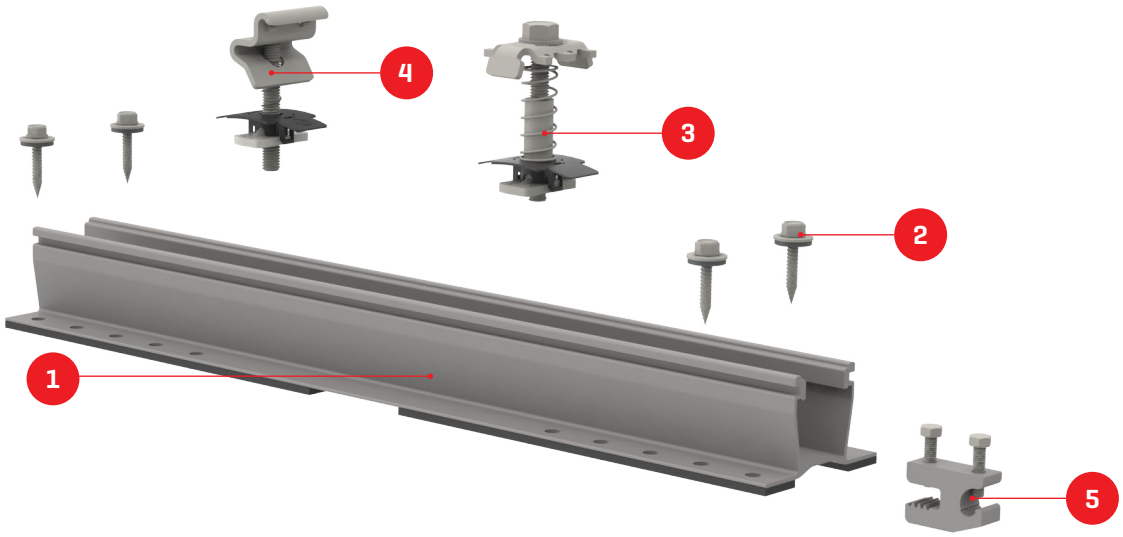
Torque Overview

- M10 T-Bolts: 25.8 ft-lb (35 Nm)
- WEEB Lug 10.3: 15 ft-lb (20.3 Nm)
- End Clamp UL2703+: M8 Allen Bolts 10.3 ft-lb (14 Nm)
- All other components: M8 Hex Bolts: 10.3 ft-lb (14 Nm)
- Self-tapping screws: Torque until EPDM washer is compressed flush with MiniRail flange

Tools and materials for the installation of third party items such as roof attachment products, roof covering and sealing products or items used for bonding and grounding are not listed here.

Please refer to the instructions of those third party products.

Components



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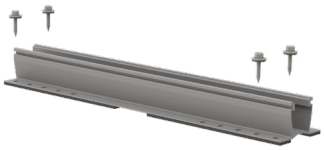


MiniRail XPRess Base Set, Mill

2 4000672

Self-tapping screw with sealing washer

3 4000229/4000230

K2 Mid Clamp M8x40
30 - 47 mm module frame height

4 4000197/4000233

K2 End Clamp
30 - 47 mm module frame height

5 4000960

ILSCO Lug

Optional Components & Accessories

Yeti Clamp, 13mm Hex
Hidden End Clamp
4000050-B

K2 Ground Lug, 13mm Hex
4000006-H

CR Microinverter & Optimizer Mounting Kit, 13mm Hex
4000629-H

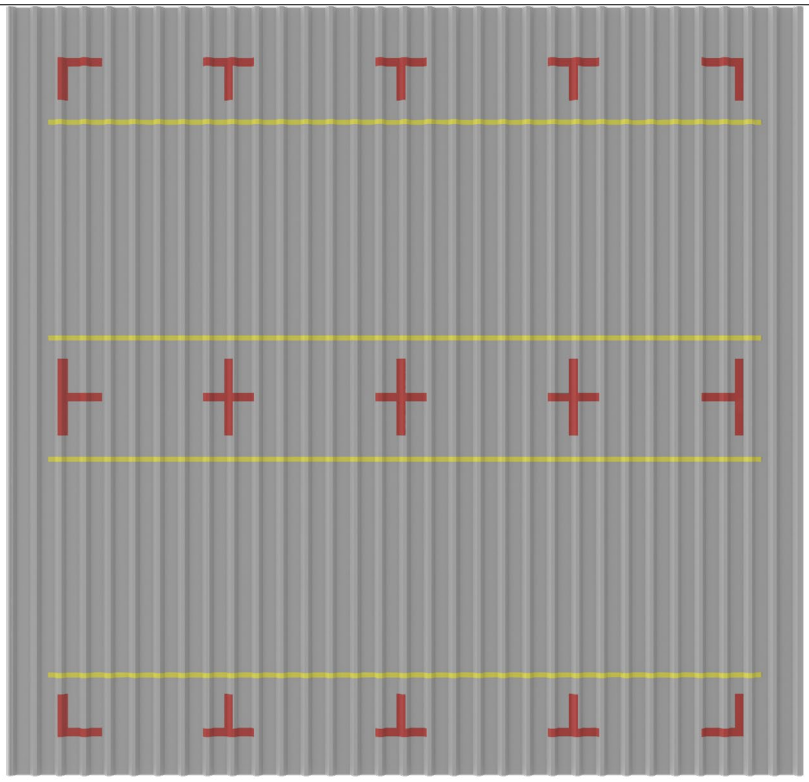
TC Wire Clip
4000069

HEYCO Sunrunner Cable Clip
4000382

Assembly

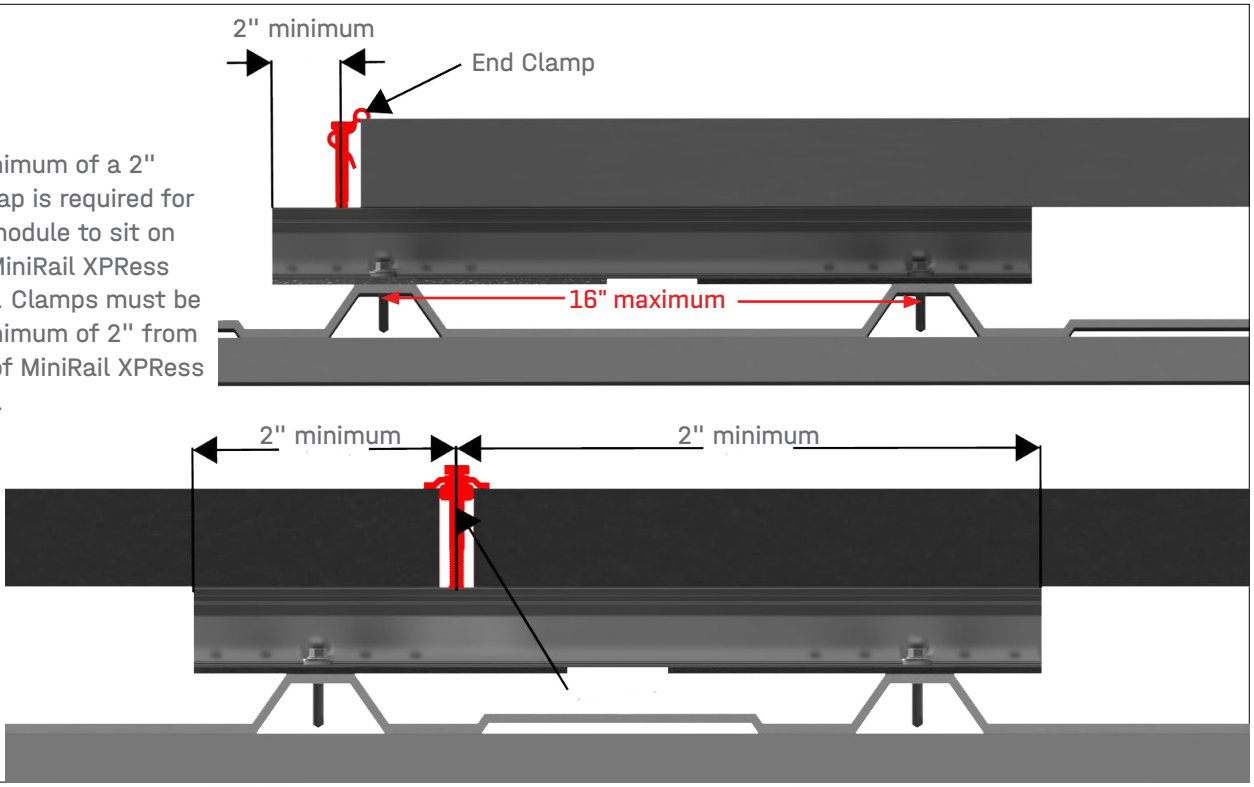
1

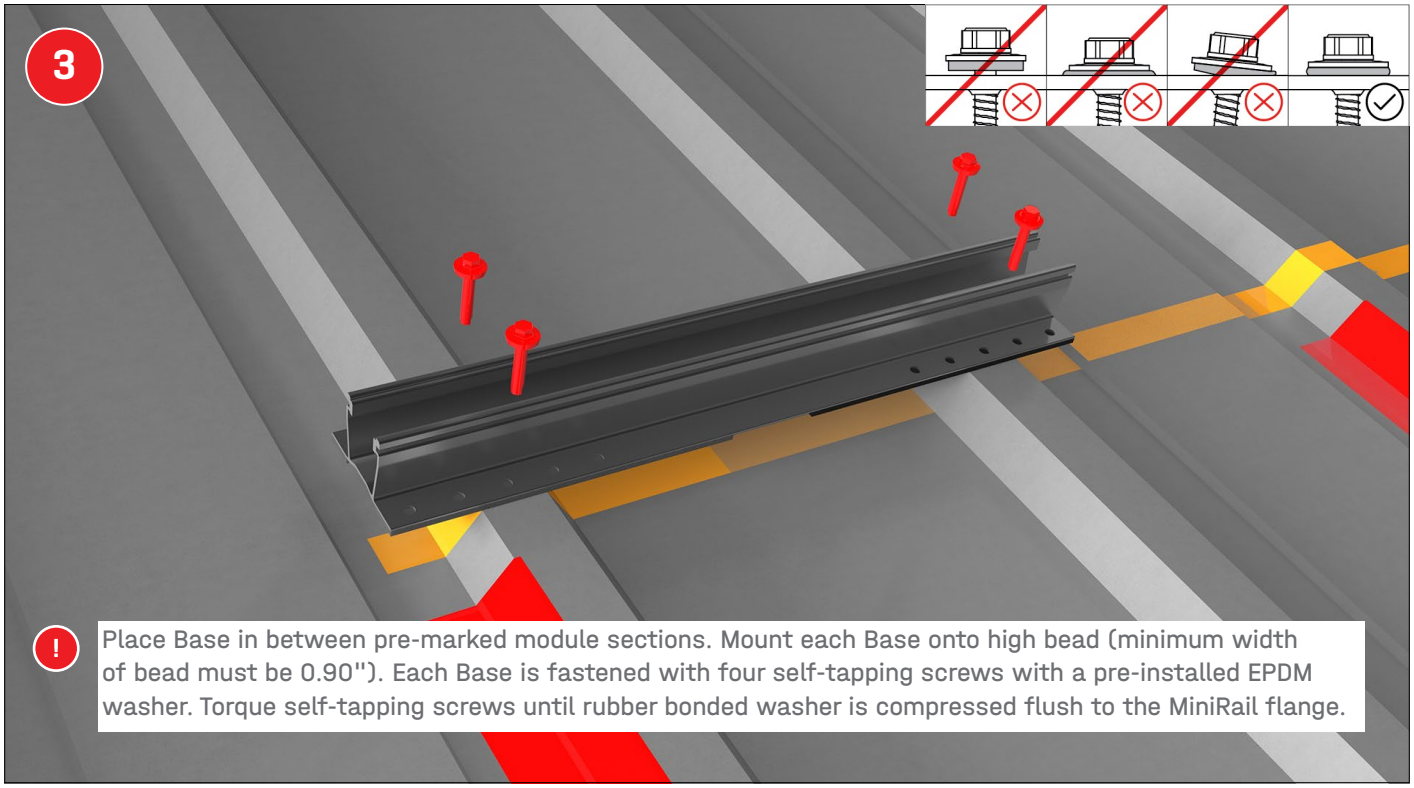
Use string or chalk lines to mark positions of module edges (shown in red). Measure up from corner of modules to module approved clamping location. Mark module approved clamping locations across array layout (shown in yellow). Max trapezoidal peak-to-peak spacing is 16".



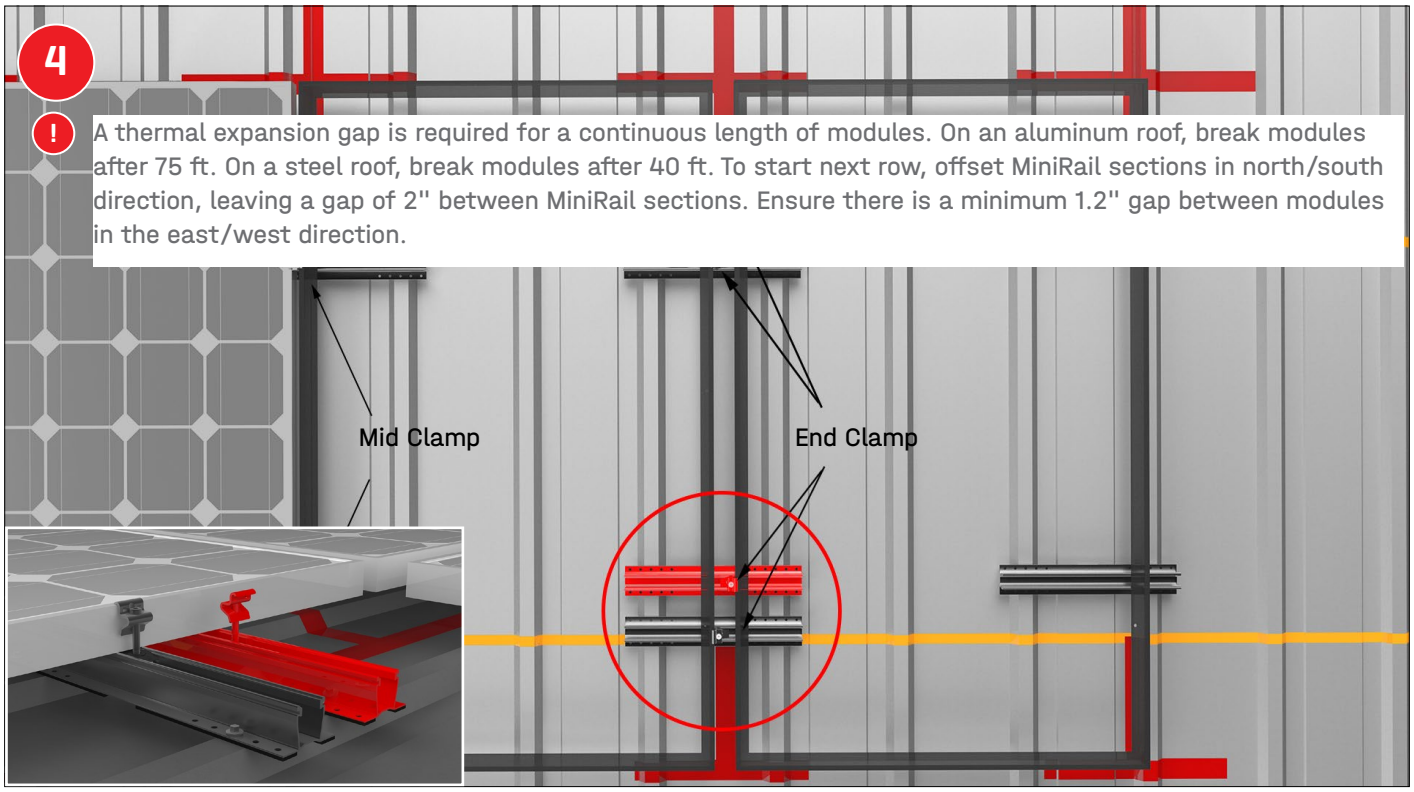
2

A minimum of a 2" overlap is required for the module to sit on the MiniRail XPRess Base. Clamps must be a minimum of 2" from end of MiniRail XPRess Base.

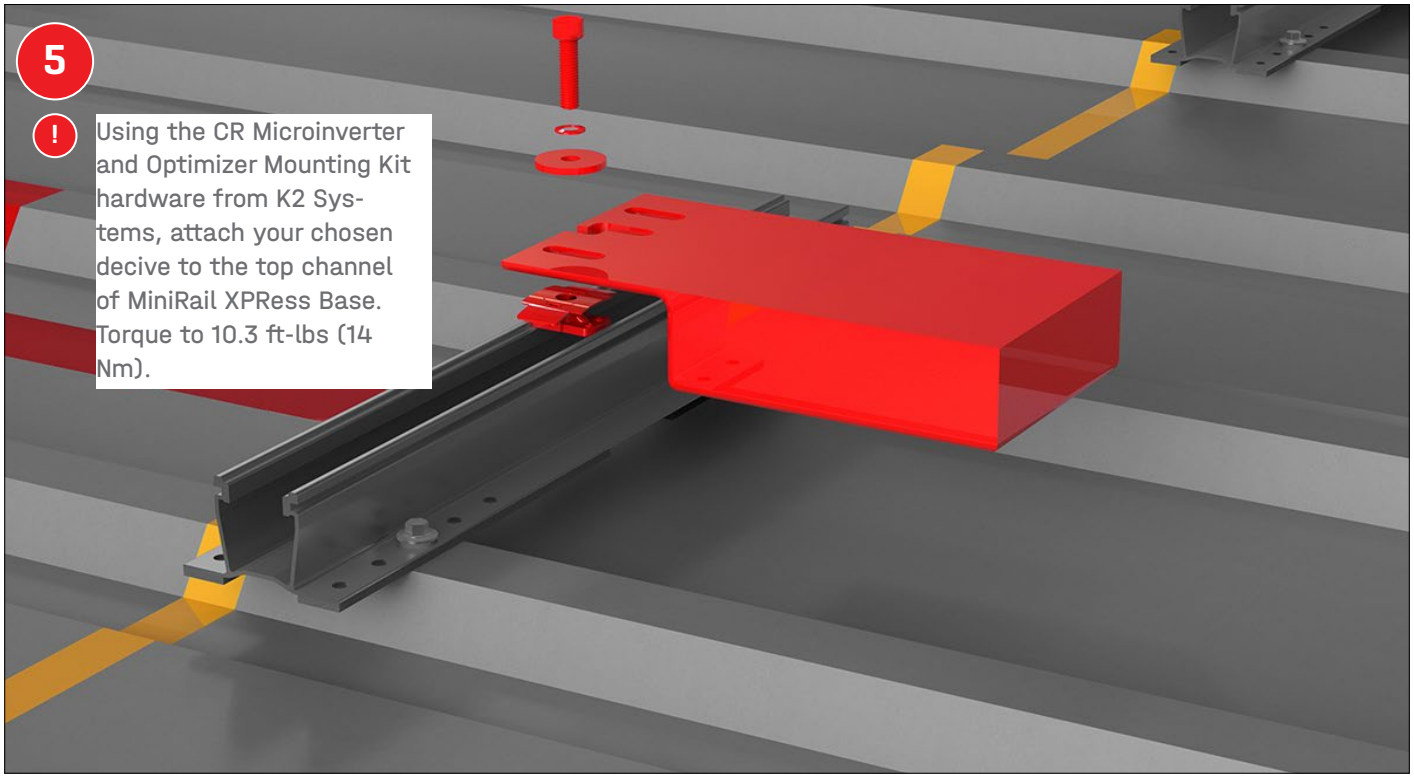


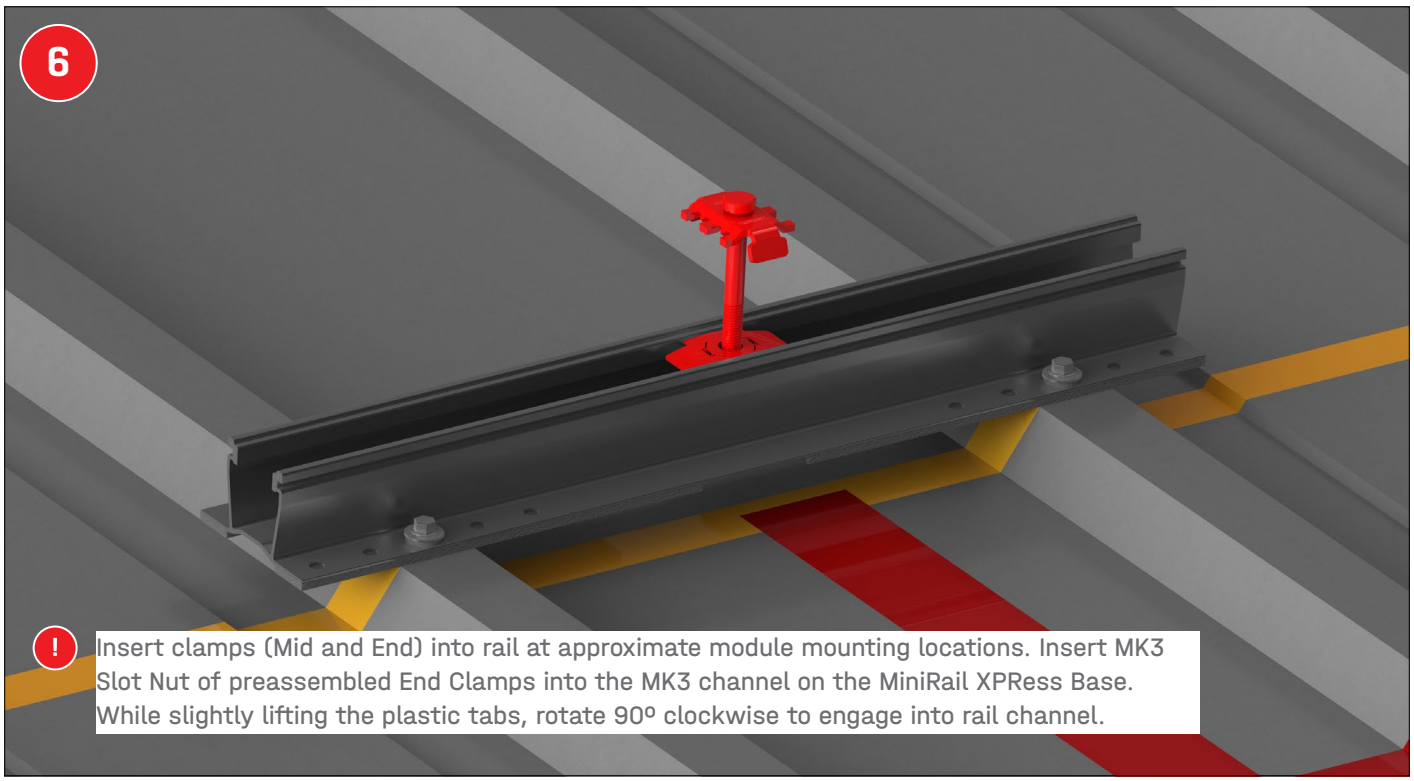


! Place Base in between pre-marked module sections. Mount each Base onto high bead (minimum width of bead must be 0.90"). Each Base is fastened with four self-tapping screws with a pre-installed EPDM washer. Torque self-tapping screws until rubber bonded washer is compressed flush to the MiniRail flange.



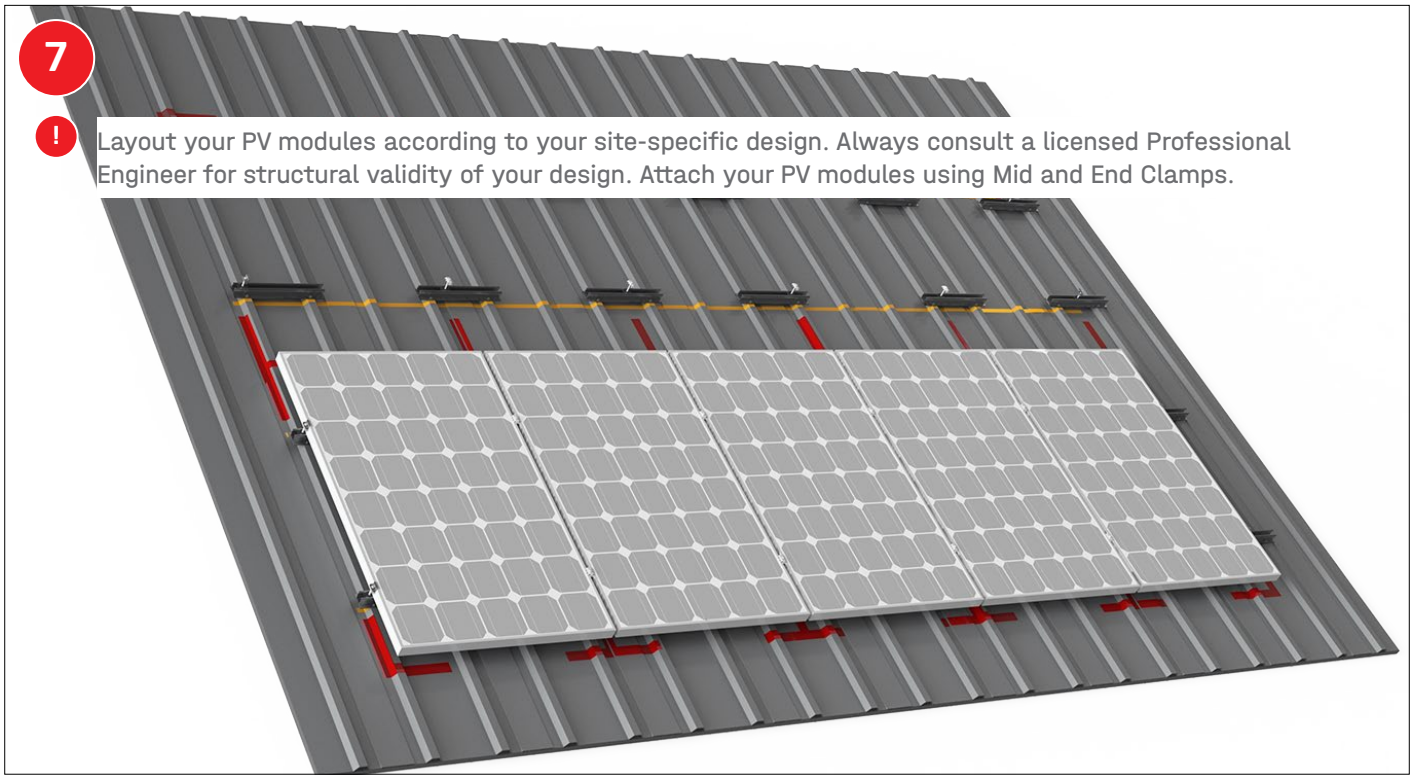
! A thermal expansion gap is required for a continuous length of modules. On an aluminum roof, break modules after 75 ft. On a steel roof, break modules after 40 ft. To start next row, offset MiniRail sections in north/south direction, leaving a gap of 2" between MiniRail sections. Ensure there is a minimum 1.2" gap between modules in the east/west direction.


5
Using the CR Microinverter and Optimizer Mounting Kit hardware from K2 Systems, attach your chosen decive to the top channel of MiniRail XPRess Base. Torque to 10.3 ft-lbs (14 Nm).


6
Insert clamps (Mid and End) into rail at approximate module mounting locations. Insert MK3 Slot Nut of preassembled End Clamps into the MK3 channel on the MiniRail XPRess Base. While slightly lifting the plastic tabs, rotate 90º clockwise to engage into rail channel.

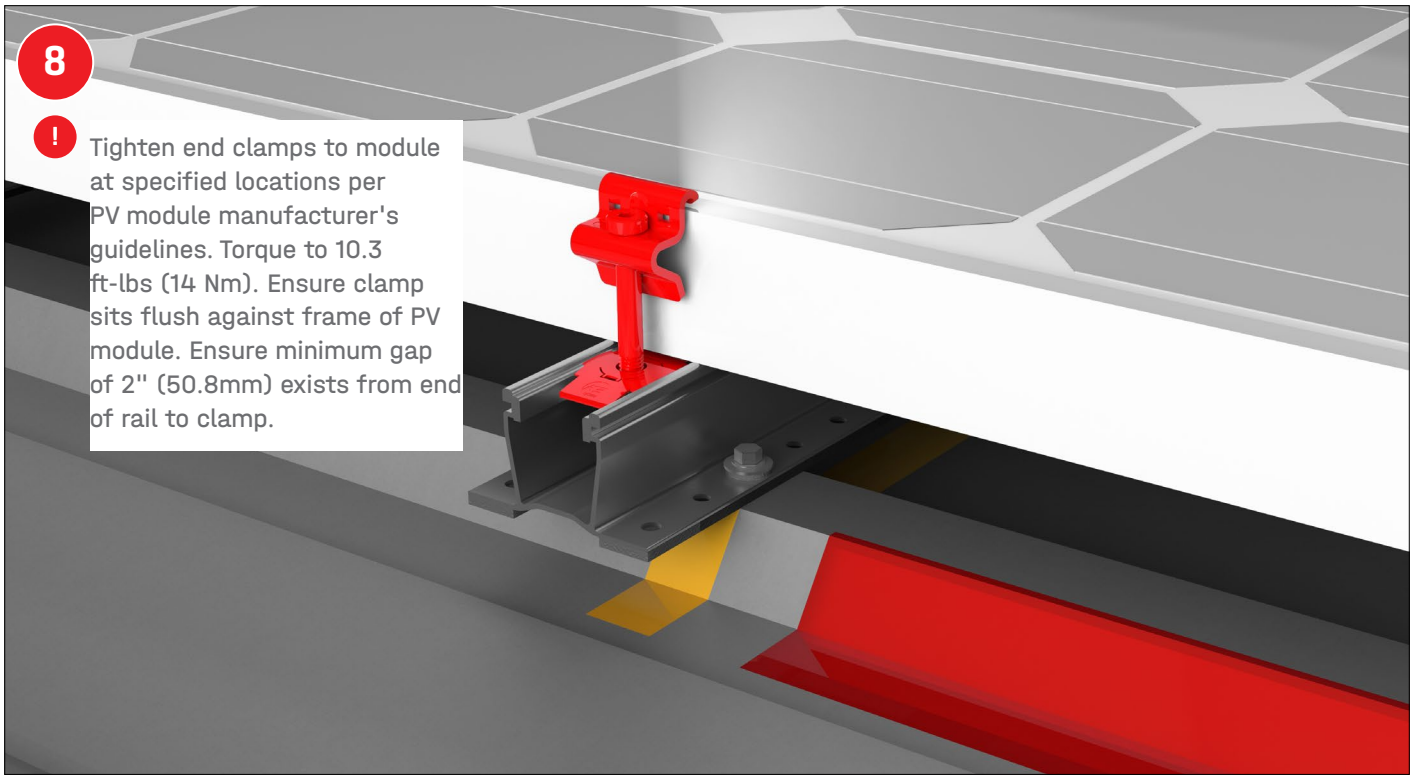
7

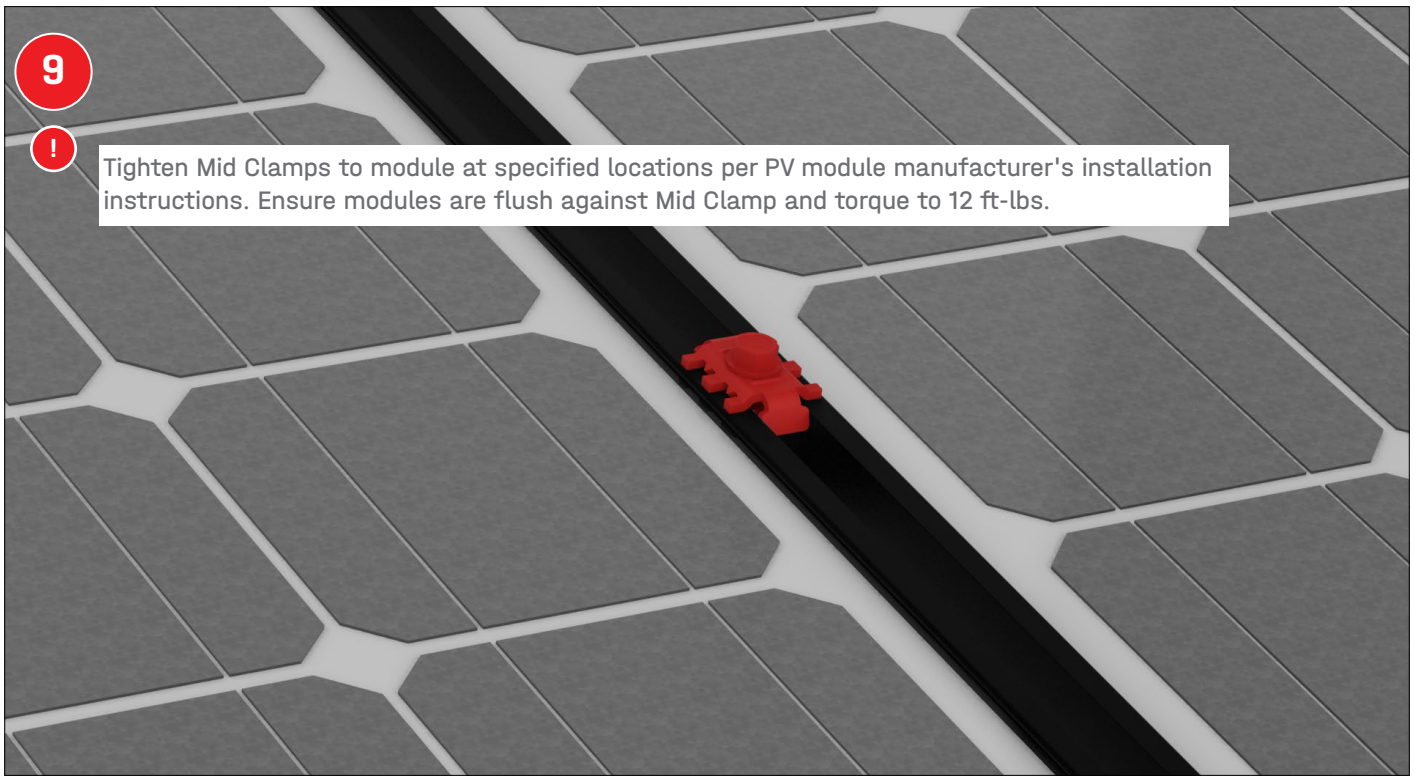
! Layout your PV modules according to your site-specific design. Always consult a licensed Professional Engineer for structural validity of your design. Attach your PV modules using Mid and End Clamps.

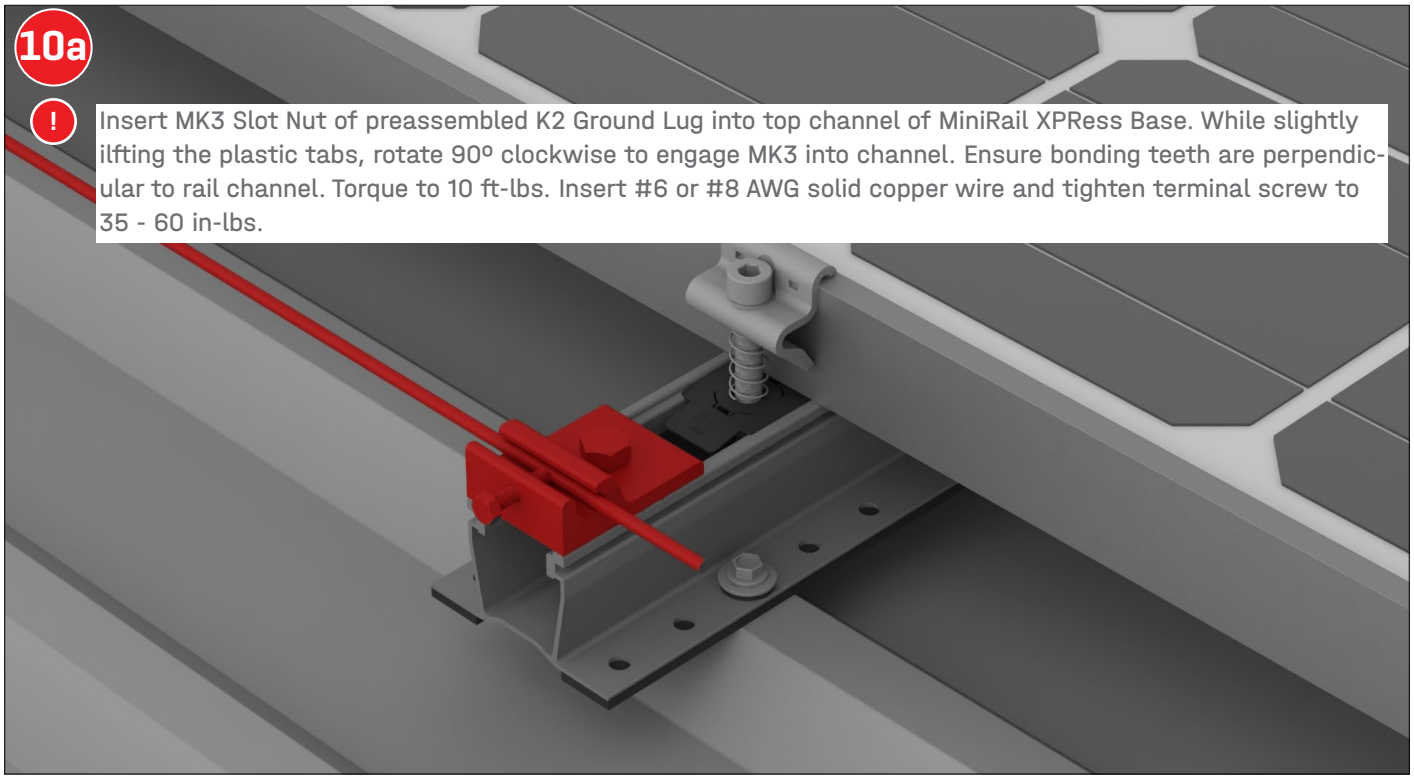


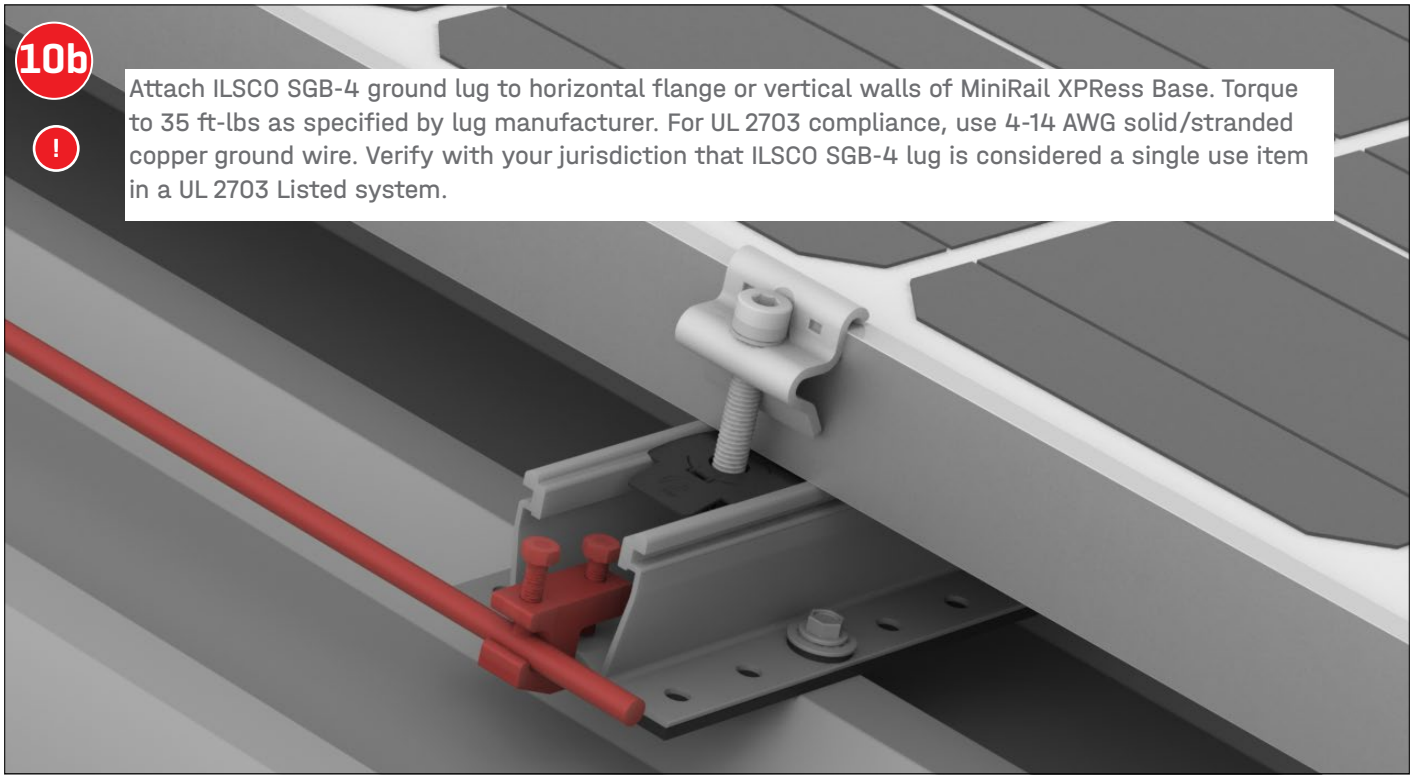
8

! Tighten end clamps to module at specified locations per PV module manufacturer's guidelines. Torque to 10.3 ft-lbs (14 Nm). Ensure clamp sits flush against frame of PV module. Ensure minimum gap of 2" (50.8mm) exists from end of rail to clamp.



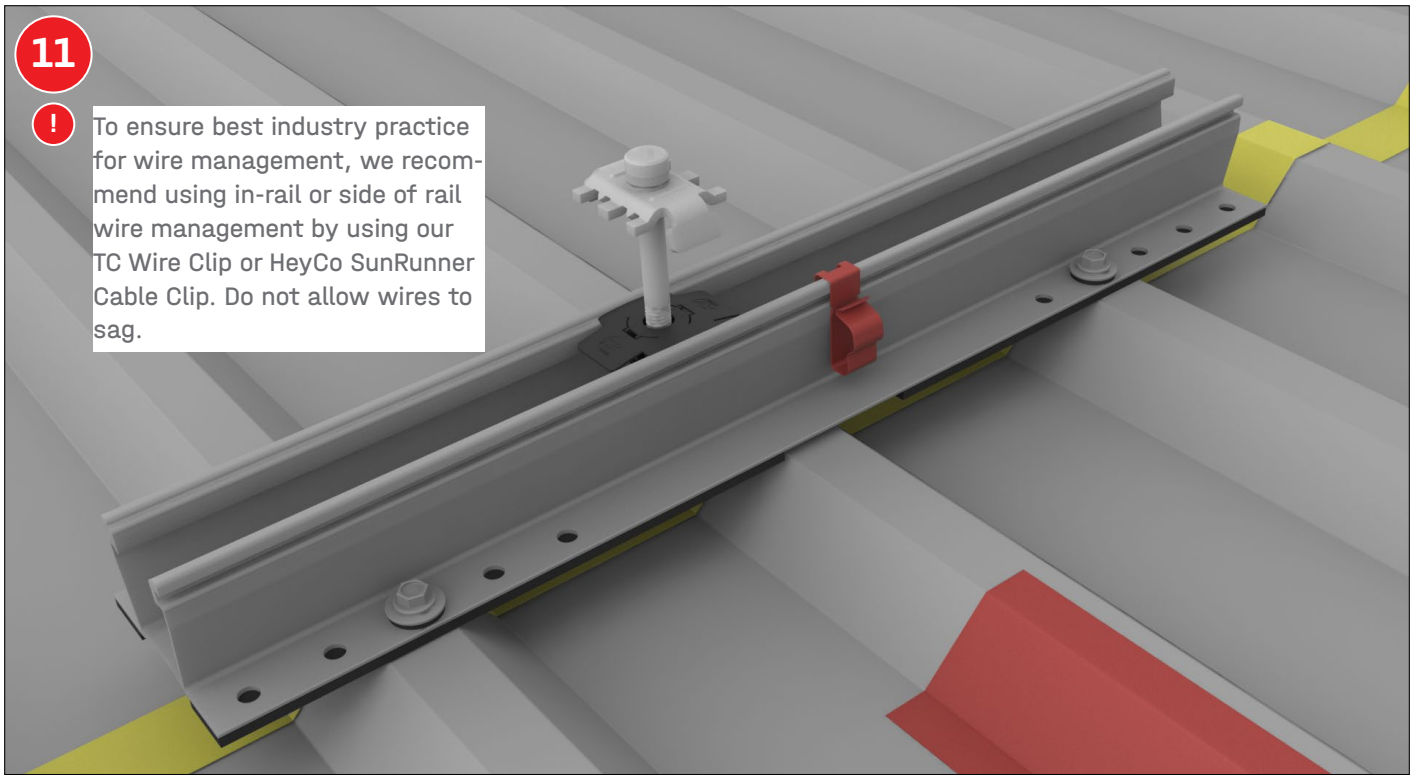

9
Tighten Mid Clamps to module at specified locations per PV module manufacturer's installation instructions. Ensure modules are flush against Mid Clamp and torque to 12 ft-lbs.


10a
Insert MK3 Slot Nut of preassembled K2 Ground Lug into top channel of MiniRail XPRess Base. While slightly ilfting the plastic tabs, rotate 90º clockwise to engage MK3 into channel. Ensure bonding teeth are perpendicular to rail channel. Torque to 10 ft-lbs. Insert #6 or #8 AWG solid copper wire and tighten terminal screw to 35 - 60 in-lbs.



10b

Attach ILSCO SGB-4 ground lug to horizontal flange or vertical walls of MiniRail XPRess Base. Torque to 35 ft-lbs as specified by lug manufacturer. For UL 2703 compliance, use 4-14 AWG solid/stranded copper ground wire. Verify with your jurisdiction that ILSCO SGB-4 lug is considered a single use item in a UL 2703 Listed system.



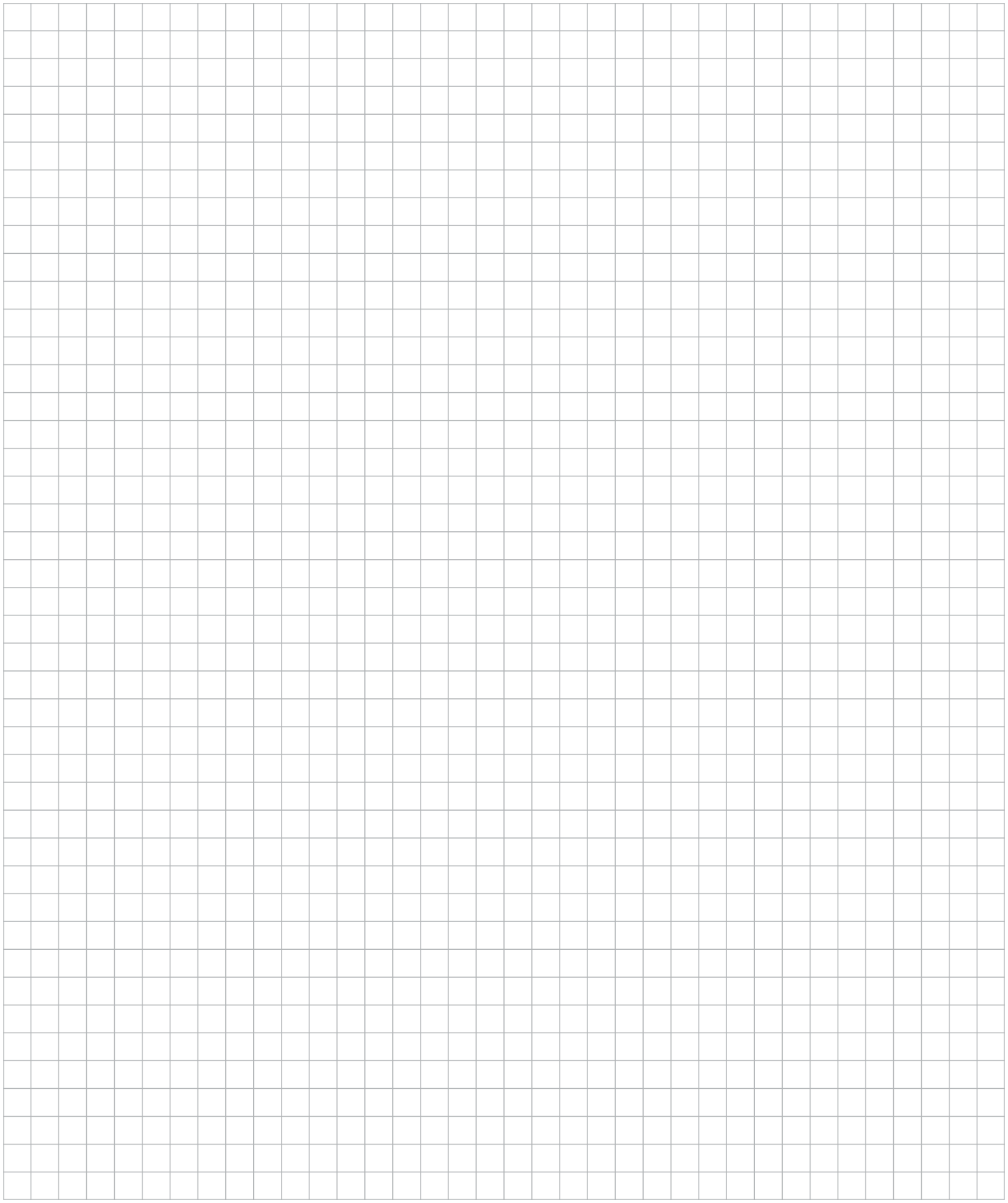
11

To ensure best industry practice for wire management, we recommend using in-rail or side of rail wire management by using our TC Wire Clip or HeyCo SunRunner Cable Clip. Do not allow wires to sag.

Notes

Notes

Notes



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Formerly Everest Solar Systems

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 info:

- **k2-systems.com/en-US/contact**
- **Telephone: +1.760.301.5300**

K2 Systems, LLC

4665 North Avenue, Suite I
Oceanside, CA 92056
USA

+1.760.301.5300
info-us@k2-systems.com
www.k2-systems.com