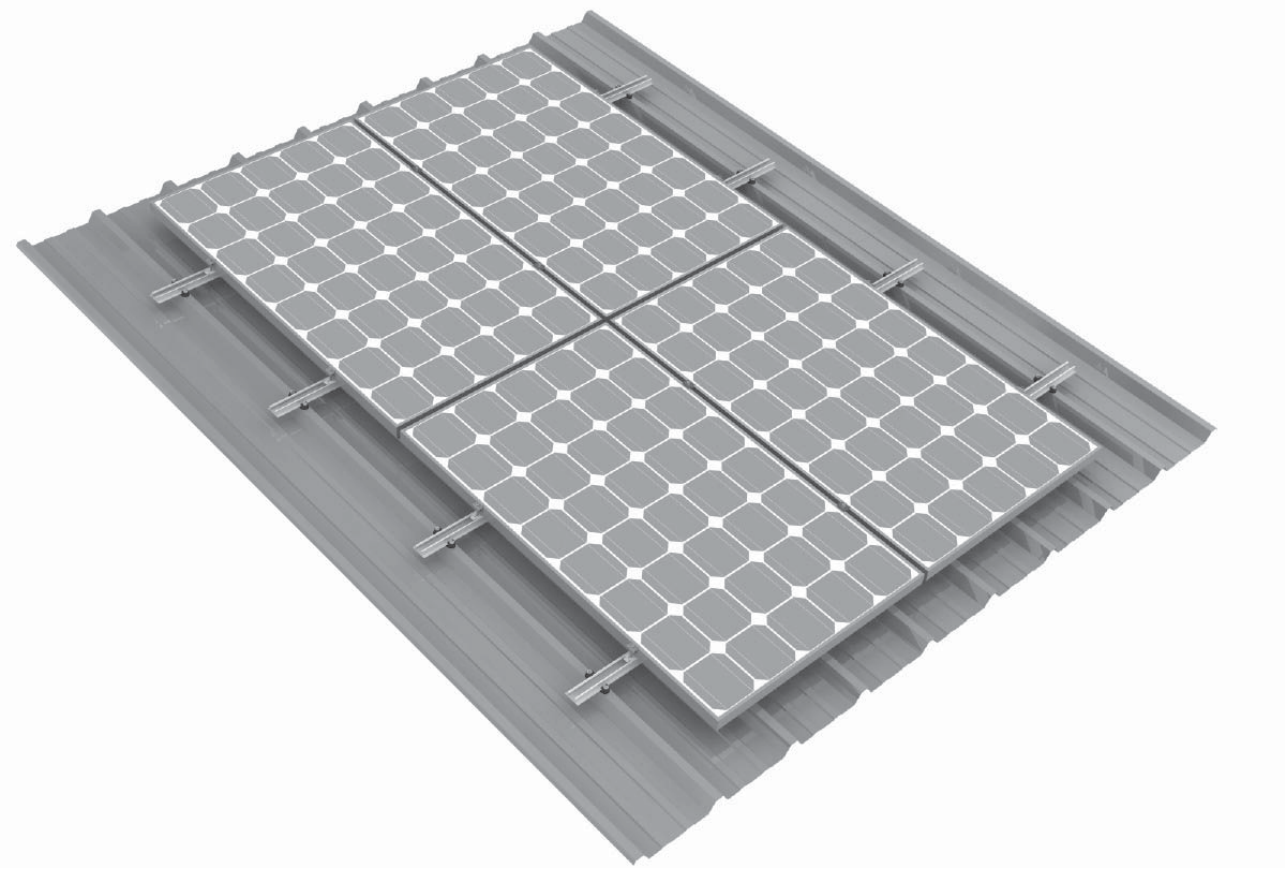
Mounting systems for solar technology



ASSEMBLY INSTRUCTIONS
XPRESSRAIL SYSTEM

UL LISTED **UL 2703 Listed System**

USA

TABLE OF CONTENTS

ENGINEERING STRENGTH IS AT OUR CORE

With sophisticated product innovations and a deep customer focus, Everest Solar is the engineering leader for all your mounting system needs. We are the US division of K2 Systems, one of Europe's market leaders with more than 3 GW installed.

We offer proven product solutions and innovative designs. Wind tunnel testing along with advanced structural and electrical validation that should 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 Everest Solar mountings systems for your Solar PV Project.

GENERAL SAFETY INSTRUCTIONS

Everest Solar Systems' General Assembly Instructions must be followed to maintain the exclusive, limited product warranty. You can access these instructions at Everest Technical Info Page **http://www.everest-solarsystems.com/us/downloads/technical-information.html** or by contacting us directly.

In general, the following applies:

¬ Systems should be installed by experienced contractors licensed and qualified to perform the work with professional workmanship and quality.

¬ Before installation, Contractor must verify that the system meets all applicable laws, regulations, ordinances, and codes. Contractor shall verify that the roof or other structures to which the system is being attached are capable of carrying the system loads. For information about the dead loads of the various system components, Contractor should review the Everest Technical information page at **http://www.everest-solarsystems.com/us/downloads/technical-information.html** or contact us directly

¬ Contractor is solely responsible for work safety and accident prevention regulations and corresponding standards and regulations of the applicable occupational safety and health agency are followed, including:
- Safety clothing is worn such as safety helmets, work shoes, and gloves.
- Where required, the contractor should use fall protection, scaffolding with arrestor equipment and other approved methods for worker safety

¬ Contractor shall verify that it is using the most current instructions by downloading the latest version from our website or contacting our office directly.

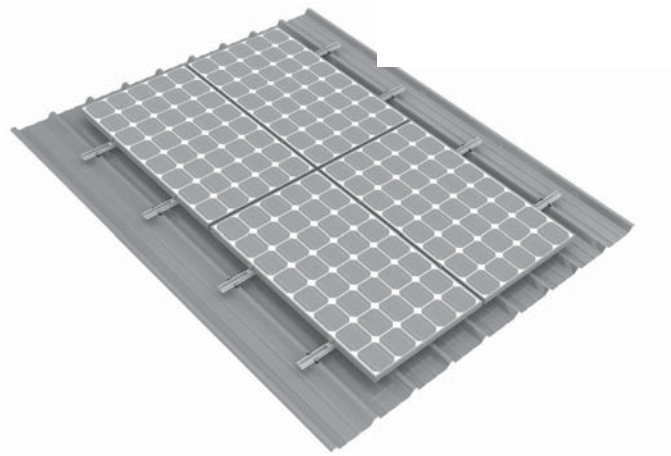
¬ Module manufacturer installation guides must be followed. Please use approved electrical bonding and grounding components that are required by the local or national codes and AHJ.

¬ A copy of these instructions must be on site, and read and understood by all workers during installation

¬ In the event our general installation and assembly instructions are not followed, or that not all system components and assemblies are used according to these instructions, or that components are used which were not obtained from us, Everest Solar Systems is not liable for any resulting defects and damages, and the exclusive, limited warranty will be void.

¬ The exclusive, limited product warranty shall apply only if all instructions are strictly adhered to and the system is correctly installed. Everest Solar Systems disclaims any and all warranties, express or implied, including without limitation any warranties of merchantability and fitness for a particular purpose other than as set forth in the exclusive, limited warranty in the terms and conditions of sale, which can be viewed under on our website: **http://www.everest-solarsystems.com/us/downloads/technical-information.html**

¬ The dismantling of the system should be in reverse order of these assembly instructions.



XPressRail for Pitched Roof :

¬ High quality, German engineering
¬ UL 2703 Listed for bonding
¬ Fast, simple installation
- No drilling, no bonding jumpers
- Pre-assembled clamps with integrated bonding
- Robust bonding rail splices
- Low part count

UL 2703 LISTED COMPONENTS

All components evaluated under UL 2703 and encompassed within Everest Solar System's UL 2703 Listing shown below

XPressRail 22

Material: Aluminum

Bonding Mid Clamp Set

Material: stainless steel
Finish: silver, dark

WEEB Lug 6.7

Material: Aluminum

Bonding End Clamp Set

Material: stainless steel
Finish: silver, dark

XPressLock Set

Material: Aluminium
Hardware: Stainless steel

XPressRail Connector Set

Material: Aluminum

Optional: Micro Inverter Mounting Kit*

Material: stainless steel

*The inverter hardware kit is not intended to replace the micro inverter ground and has only been evaluated to attach to the rail.

NON-UL LISTED COMPONENTS

Components in this section were not evaluated by UL for bonding

XPressClip

Material: Glass fibre reinforced polyamid, EPDM

Self-Tapping Screw 6 x 36

Material: Stainless steel, jointing: EPDM,
wrench size: 8 mm

Alternative: Self-tapping moulded screw 6 x 38
Material: Stainless Steel, EPDM, SW 8

AT A GLANCE: OVERVIEW OF THE TOOLS

Everest Solar Systems are designed to make installation easy and fast. The basic tools required to assemble the parts are listed below as a guide.

Torque Wrench

With attachment for HW 6

Measuring Tape

Cordless Screwdriver

With attachment for HW 6

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.

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.

Everest Solar 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. At least one ground lug must be used to ground all strings within each sub-array, although additional may be used for redundancy. 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. Refer to Appendix on page 16 for a list of modules that have been tested.

If the module manufacturer's UL 1703 Listing requires a higher clearance between the module and roof surface, the use of a Climber Set and additional CrossRail is required. An additional clearance of 1.88" (48mm) or 3.15" (80mm) can be obtained using CrossRail 48 or 80, respectively.

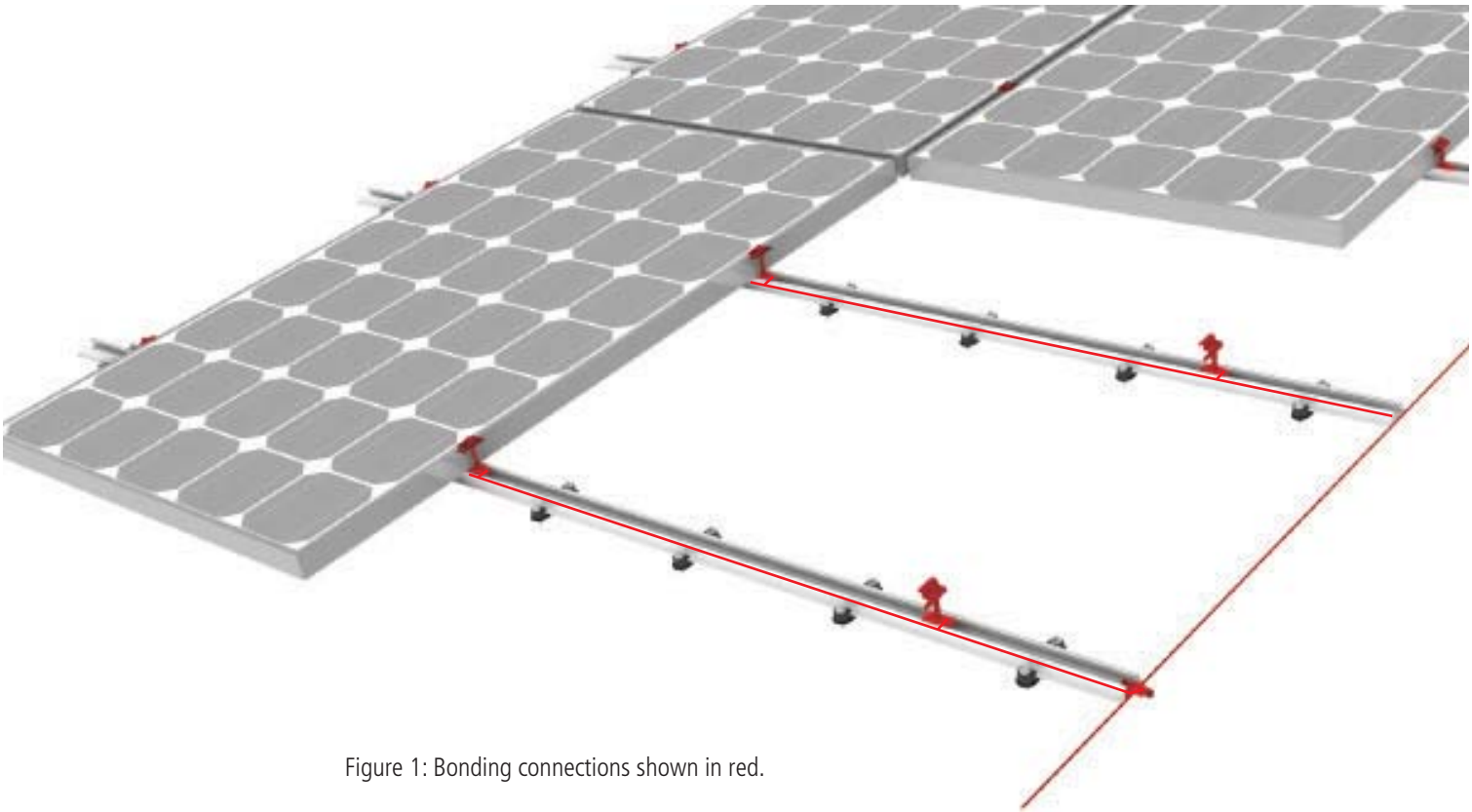


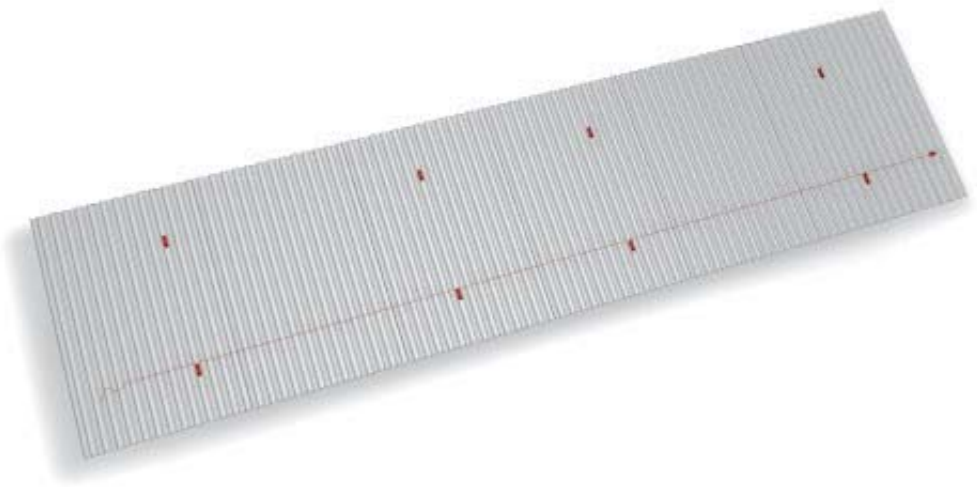
Figure 1: Bonding connections shown in red.

XPRESSRAIL ASSEMBLY: STEP BY STEP

In order to ensure safe and correct assembly of the system, please first read through all of the steps. For each step, the materials required are listed.

General Instruction:

- If the trapezoidal roof is to be fastened with storm washers, do not bolt the XPressClips to the calottes! Alternatively, mount all XPressClips staggered in this sequence on the trapezoidal roof.
- **The modules may never be attached over the thermal expansion joint.**
- The product is petty-patent-protected and **patent pending.**



1 of 18

MOUNT XPRESSCLIPS

Align XpressClips horizontally with each other using a chalk line, and mark the position of the rail on the roof. Mount each XpressClip onto the high bead (minimum width of bead must be 0.90 inches). The K2 logo should point towards the roof ridge. The XPressClips are each fastened with two self-tapping hexagonal screws 6 x 36 mm with EPDM seal washers.

- No pre-drilling! – Except in the case of overlapping trapezoidal roof sheets, to avoid spaces.
- Thickness of steel trapezoidal sheet: min. 0.0239 inch, gauge 26 (assuming 52213 psi).
- Thickness of aluminium trapezoidal sheet: min 0.039 inch, gauge 18 (assuming 28282 psi).
- Tightening torque based on flush fit.

Materials required: XPressClip, tapping screws with sealing washer

See page 15 for instructions for special space-saving assembly.

2 of 18

PLACE XPRESSRAIL

Guide the XPressRail diagonally into the upper groove of the first two XPressClips attached on the roof and push upward until they can go no further.

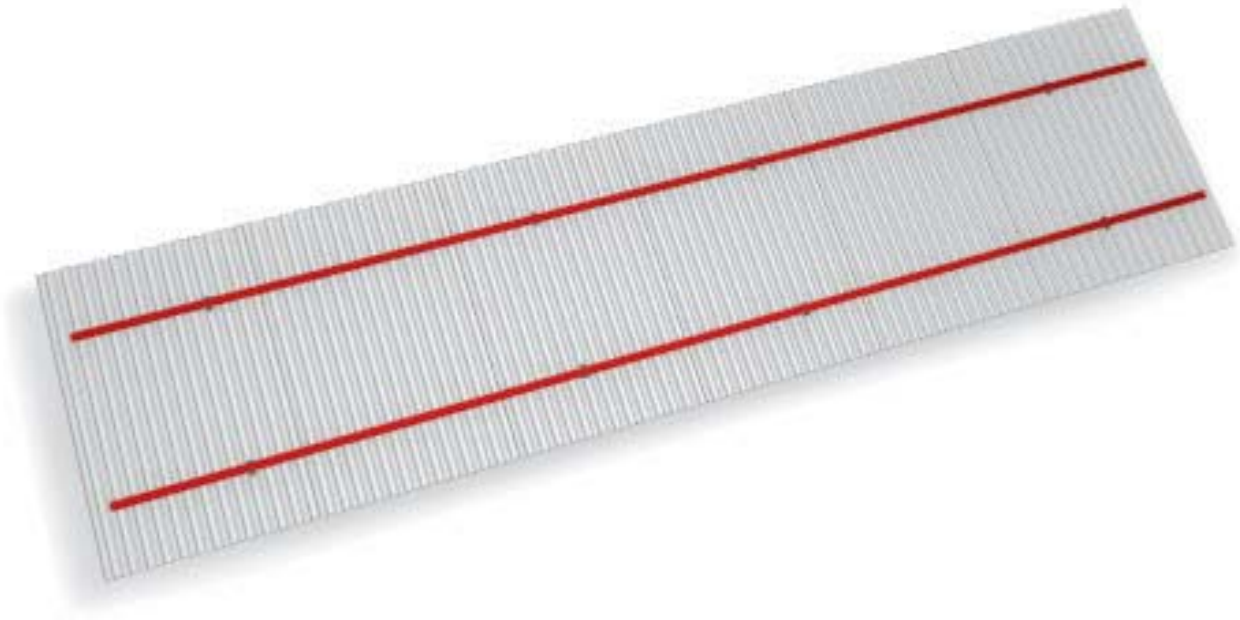
Materials required: XPressRail

3 of 18

Lay XPressRail onto the supporting area of the XPressClips…

4 of 18

… and push into the lower groove.

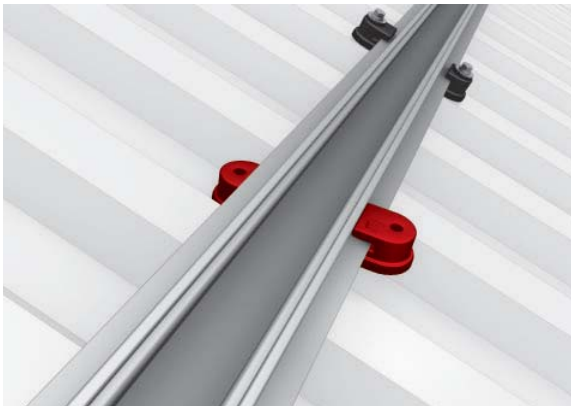


5
of 18

PLAN IN THERMAL EXPANSION

The XPressRail must always be placed to support the clamping range approved by the module manufacturer. It is recommended that a physical gap for thermal expansion between adjoining rails be placed every 20 ft, with a maximum allowable distance not to exceed 27.6 ft. The gap should be 1.2 - 2 inches between rails.
The modules may never be attached over the thermal expansion joint.

Materials required: XPressRail

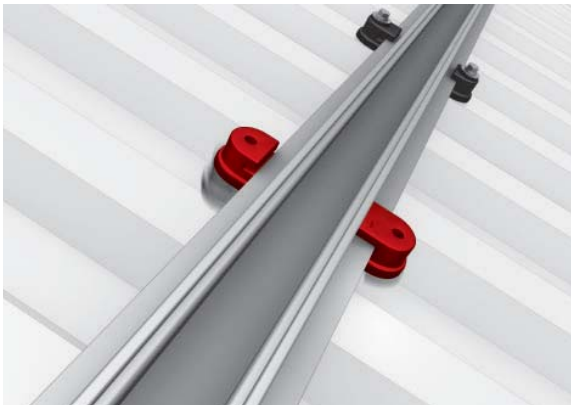


6 of 18

LOCK XPRESSRAIL IN PLACE WITH ADDITIONAL XPRESSCLIPS

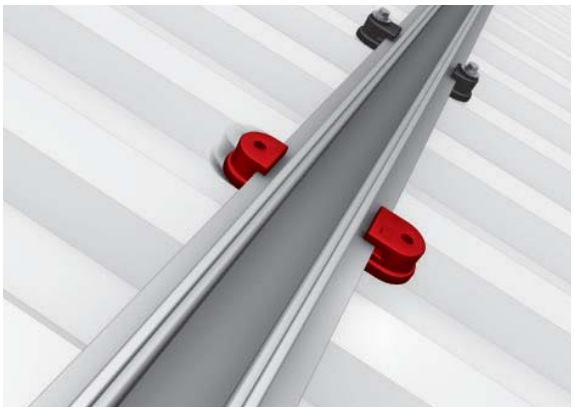
In the low beads, add XPressClips onto the rail…

Materials required: XPressClip



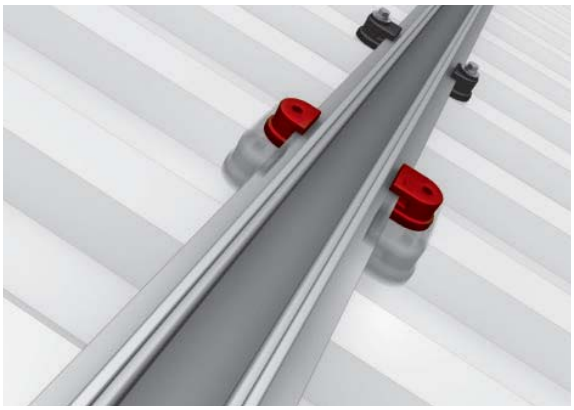
7 of 18

…push the XPressClip up on the rail…



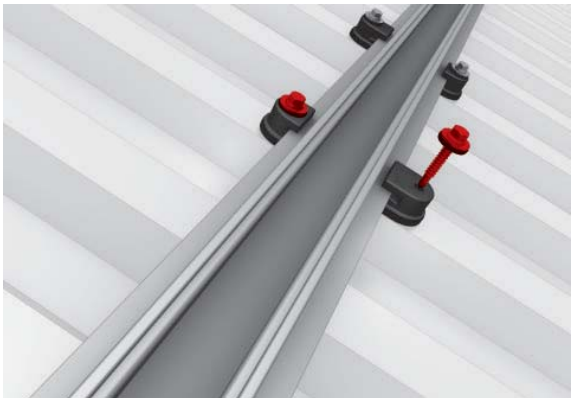
8 of 18

…then slide the XPressClip down until the top groove of the XPressClip is engaged in the flange of the rail…



9 of 18

…then slide the XPressClip sideways on the rail until it is positioned on the top bead of the trapezoidal roof.

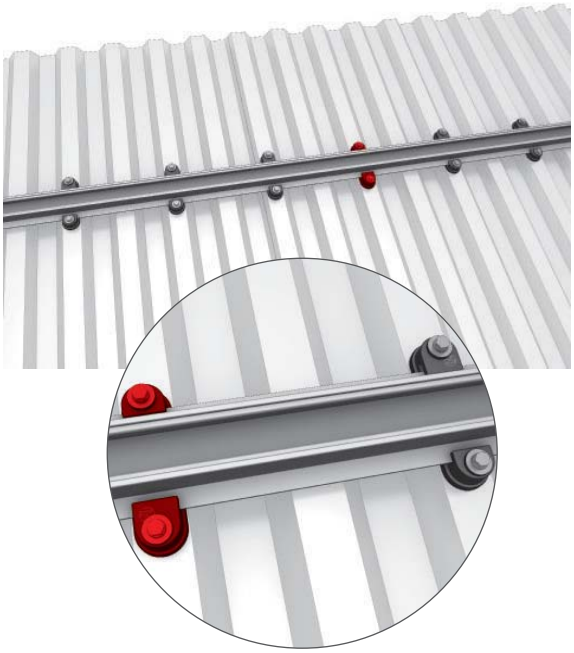


10 of 18

FASTEN XPRESSCLIPS

Attach each XPressClip with two self tapping screws 6 x 36 mm. The number of additional clips required depends on the wind and snow loads. **Screw the self-tapping screws flush.**

Materials required: XPressClip, self tapping screws with sealing washer



11 of 18

ADHERE TO CLIP SEQUENCE AND SPACING

Insert every fourth clip with the K2 logo downward in order to prevent the rail from shifting in the direction of the roof edge.

Distance between clips is project specific, and should be calculated by a licensed P.E.

The maximum distance between two clips shall not exceed the following:

- Roof edge area: 15.7 inch
- Roof middle area: 29.5 inch; for cross-bracing 19.6 inch

In order to maintain structural integrity and water tightness, **never** attach **two** XPressClips at a top bead! For rail joints **directly** on a top bead: always fasten XPressClips to the **respective** closest top bead of the rails.

Important! At the end of each rail, a XPressClip must be fastened to the last top bead! The cantilever of the rail must be no more than 9.8 inch.

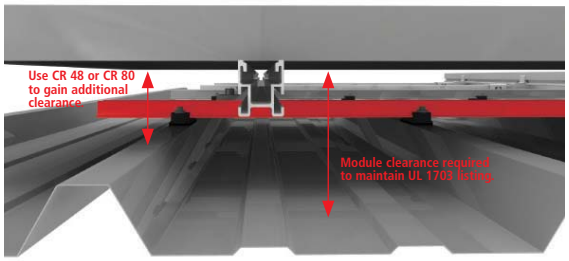
Materials required: XPressClip, self tapping screws with sealing washer

12 of 18

ASSEMBLY SPEEDLOCK

The XPressLock must always be mounted in the middle of the rail. First insert an M K2 slot nut level with a XPressClip and turn it clockwise by 90°. Screw the XPressLock over the XPressClip with the M K2 using an M8 x 20 countersunk head screw. Tightening torque 10.3 lbf-ft (14 Nm). The XPressClip fastens the XPressLock and therefore the row of rails.

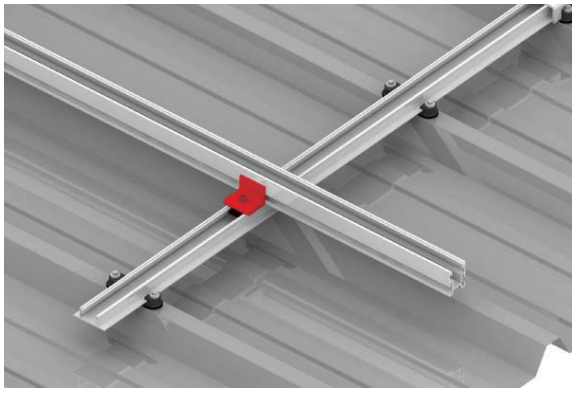
Materials required: M K2, XPressLock, Hexagon socket countersunk head screw M8 x 20



13A of 18

OPTIONAL: ADDITIONAL MODULE CLEARANCE

Steps 13B through 13C below should only be used if the module requires a higher roof clearance than XPressRail provides. Use CrossRail 48 to gain an additional 1.89" of clearance, and CrossRail 80 for 3.15" of additional clearance.

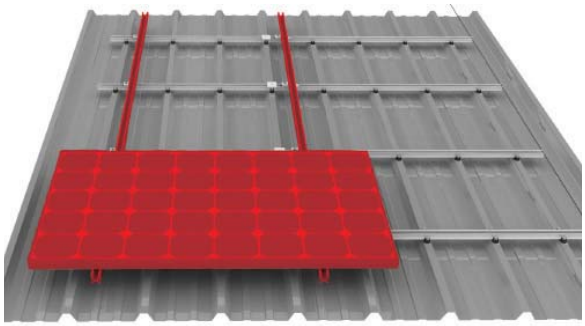


13B of 18

OPTIONAL: ATTACH CROSSRAIL

Attach CrossRail 48 or 80 using a Climber Set. Position the CrossRails accordingly, based upon your specific array layout and the module manufacturer's clamping locations. Torque the Climber Set to 11.8 lb-ft (16 Nm).

Materials required: Climber Set, CrossRail 48/80



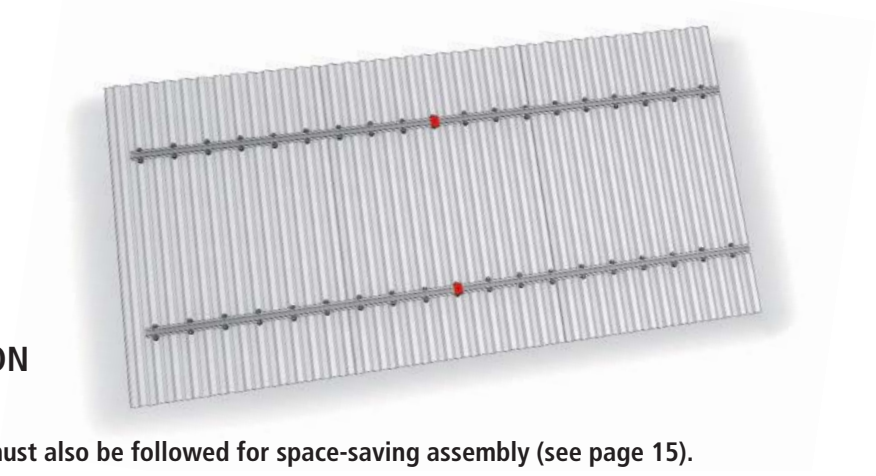
13C of 18

OPTIONAL: ATTACH PV MODULES

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 clamp sets, following Steps 15 to 16.

Important: Verify module manufacturers recommended torque specification to ensure clamps are compatible.

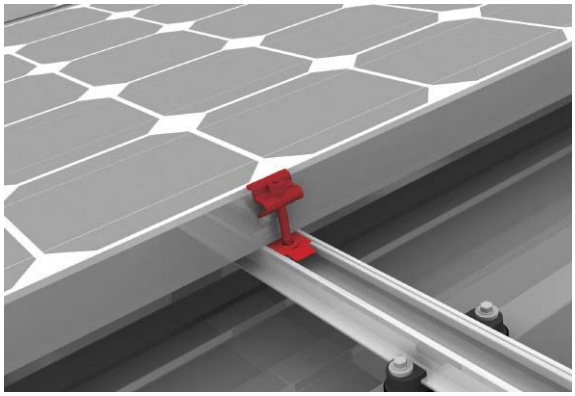
Materials required: PV Modules, Mid Clamps, End Clamps



14 of 18

IMPORTANT INFORMATION

- **These assembly instructions must also be followed for space-saving assembly (see page 15).**



15 of 18

ATTACH END CLAMPS

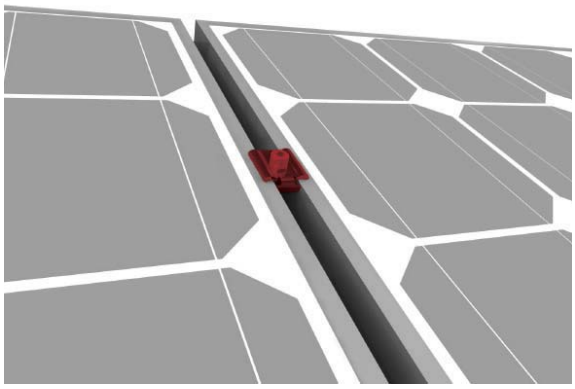
Insert the MK2 slot nut of the pre-assembled end clamps into the top channel on XPressRail. While slightly lifting the plastic tabs, rotate 90 degrees clockwise to engage the MK2 into the channel.

Attach the end clamps to the module at the specified locations per the PV module manufacturer's installation instructions. Torque the M8 bolt to 10.3 lb-ft.

Never mount end clamps directly over a rail connector or at the end of the rail. Ensure a minimum gap of 1" (20mm) exists from the end of the rail to the clamp.

Tightening torque 10.3 lb-ft (14 Nm).

Materials required: End Clamp Set



16 of 18

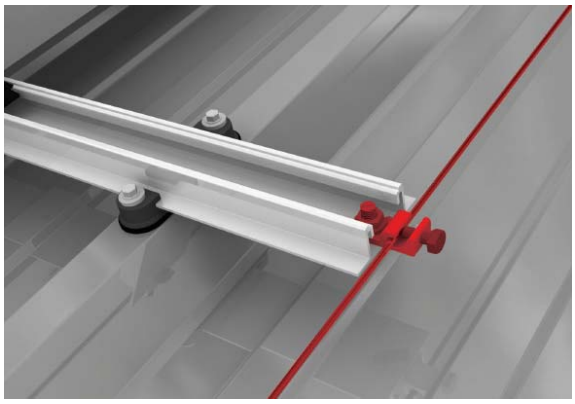
ATTACH MID CLAMPS

Insert the MK2 slot nut of the pre-assembled mid clamps into the top channel on XPressRail. While slightly lifting the plastic tabs, rotate 90 degrees clockwise to engage the MK2 into the channel.

Attach the mid clamps to the module at the specified locations per the PV module manufacturer's installation instructions. Torque the M8 bolt to 10.3 lb-ft.

Important: Verify module manufacturers recommended torque specification to ensure clamps are compatible.

Materials required: Mid Clamp Set



17 of 18

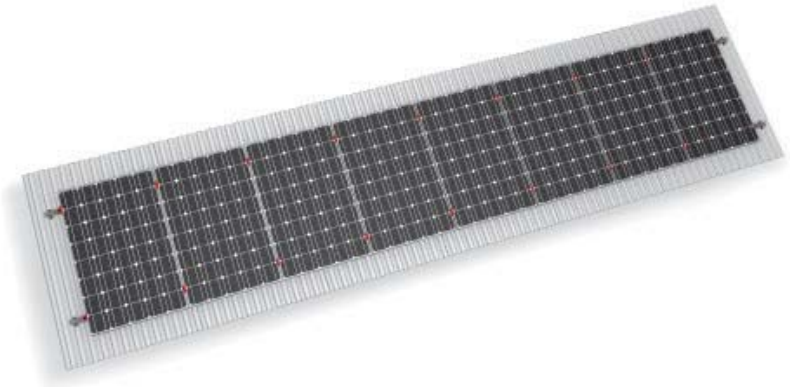
SYSTEM GROUNDING

XPressRail components are required to be electrically bonded to ground via Burndy's WEEB Lug 6.7 Assembly (Burndy P/N 781810537558) and the use of either #6 or #8 AWG solid copper wire. A minimum of one WEEB Lug 6.7 is required per each independent row of modules.

To attach the WEEB Lug 8.0, drill a 1/4" clearance hole inside the channel at the end of the rail. Assemble the WEEB-LUG-6.7 assembly and torque fasteners to 10 ft-lbs (13.5 N-m) using Penetrox-A on threads.

Once the lug has been installed, a #6 or #8 AWG solid copper wire from a DC ground location external to the array must be inserted in the equipment ground conductor location on the lug. Torque the bolt to 7 lb-ft (10 N-m).

Materials required: Burndy WEEB-LUG-6.7, WEEB Lug Hardware Kit

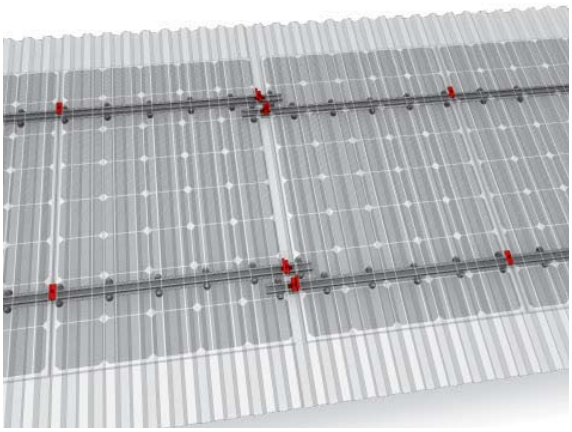


18 of 18

IMPORTANT INSTRUCTIONS FOR ASSEMBLY

- ¬ Slot nuts at splice locations are not allowed.
- ¬ Never mount middle or end clamps directly onto the rail joint or rail end! (Distance: min. 1 inch (20mm) from end clamp)
- ¬ The modules may never be fixed over the thermal expansion joint.

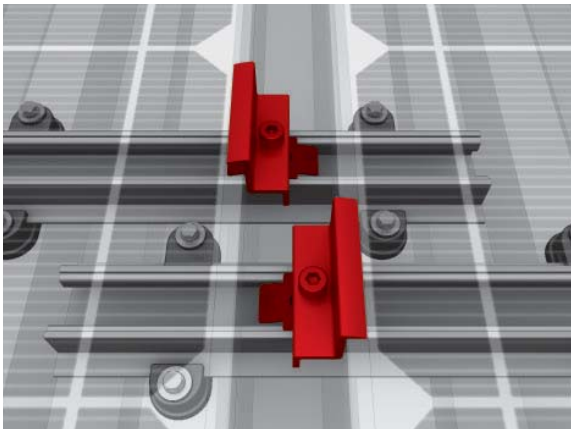
ALTERNATIVE SYSTEM ASSEMBLY



1 of 2

SPACE-SAVING ASSEMBLY

You can offset every second row of rails to save space when assembling the XPressRail. The space between the rails is the space required for mounting the XPressClips. The next rail is laid at the same height as the first. This assembly method reduces the distance between the modules at the end of the rail to 1.6 inches. Module edges should be aligned. The total length of a row of rails may not exceed 27.6 ft.



2 of 2

RAIL PROJECTION

How far the rail projects depends on the width of the modules. It must be at least 0.8 inch from the end clamp.
Please note that the clearance between two clips on a seam must be a minimum of 0.4 inches.

APPENDIX

Everest XPressRail system was tested with the SolarWorld, Sunmodule family of modules.

Plus SW 200 Mono
Plus SW 205 Mono
Plus SW 210 Mono
Plus SW 215 Mono
Plus SW 220 Mono
Plus SW 225 Mono
Plus SW 230 Mono
Plus SW 235 Mono
Plus SW 240 Mono
Plus SW 245 Mono
Plus SW 250 Mono
Plus SW 255 Mono
Plus SW 260 Mono
Plus SW 265 Mono
Plus SW 270 Mono
Plus SW 275 Mono
Plus SW 280 Mono
Plus SW 285 Mono
Plus SW 290 Mono
Plus SW 295 Mono
Plus SW 300 Mono
Plus SW 200 Poly
Plus SW 205 Poly
Plus SW 210 Poly
Plus SW 215 Poly
Plus SW 220 Poly
Plus SW 225 Poly
Plus SW 230 Poly
Plus SW 235 Poly
Plus SW 240 Poly
Plus SW 245 Poly
Plus SW 250 Poly
Plus SW 255 Poly
Plus SW 260 Poly
Plus SW 265 Poly
Plus SW 270 Poly
Plus SW 275 Poly
Plus SW 280 Poly
(all may be followed by “black”)

TERMS AND CONDITIONS

Product images are for illustrative purposes only. Specifications are subject to change without notice. All sales of our products shall be subject to Everest Solar Systems terms and conditions, including the exclusive limited warranty set forth therein. The terms and conditions can be found at
http://www.everest-solarsystems.com/us/downloads/technical-information.html

Ready!

THANK YOU FOR CHOOSING AN EVEREST SOLAR SYSTEMS MOUNTING SYSTEM.

Systems from Everest Solar Systems are fast and simple to install. Please contact us if you have any questions or suggestions for improvements. We are looking forward to receive your call on our

Service-Hotline +1 760.301.5300

Mounting systems for solar technology

Everest Solar Systems, LLC
3809 Ocean Ranch Blvd.
Suite 111
Oceanside, CA 92056
Tel. +1.760.301.5300
info@everest-solarsystems.com
www.everest-solarsystems.com

K2 Systems International:
World headquarters
K2 Systems GmbH, Germany
K2 Systems SARL, France
K2 Systems SRL, Italy
K2 Solar Mounting Solutions Ltd., UK

Assembly Instructions XPressRail | US8 | 1215