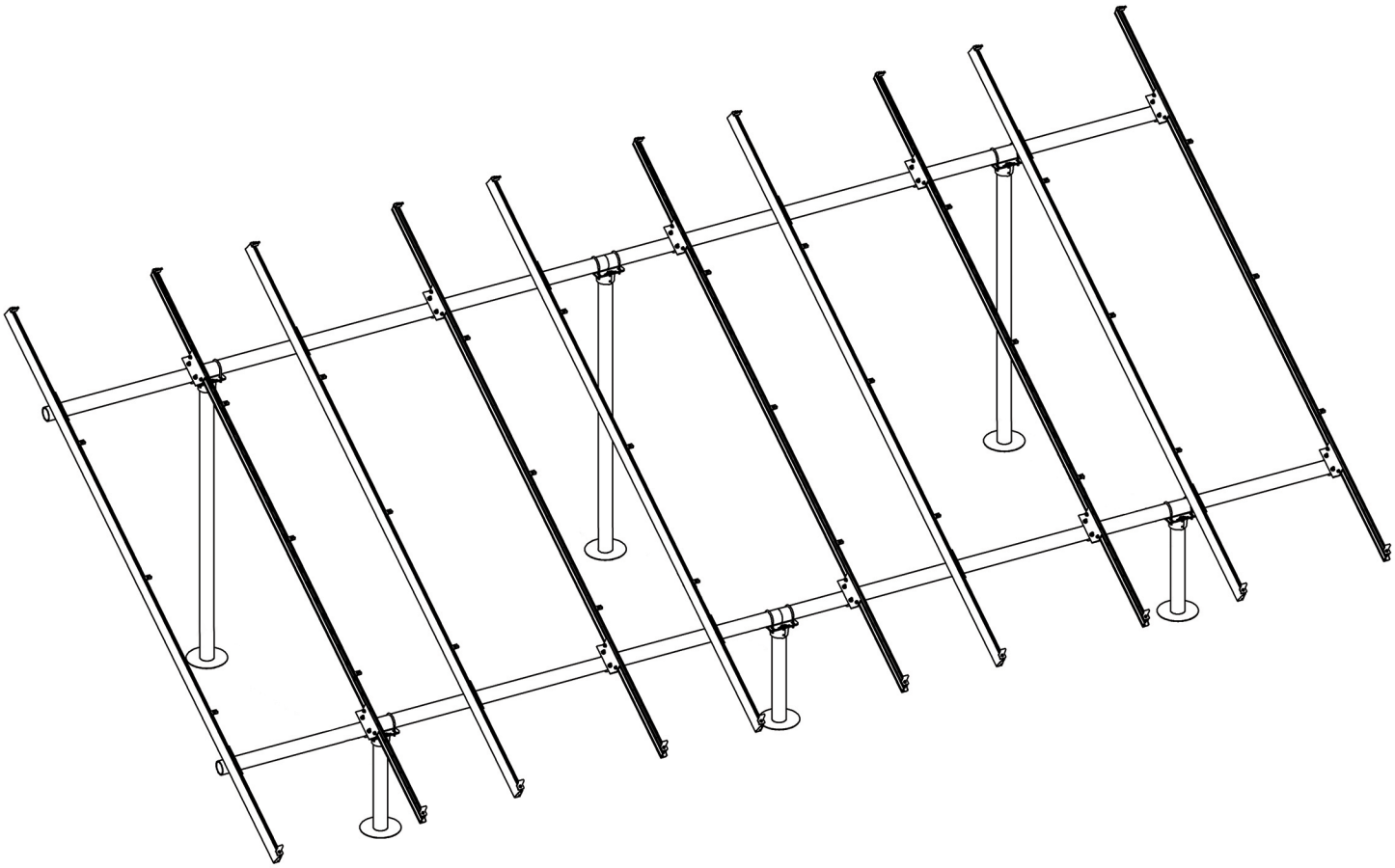
GROUND MOUNT



INSTALLATION MANUAL

IRONRIDGE

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DISCLAIMER

This manual describes proper installation procedures and provides necessary standards required for product reliability. Warranty details are available on website. All installers must thoroughly read this manual and have a clear understanding of the installation procedures prior to installation. Any installation or use of this product not in accord with or not authorized by this written instruction shall void any and all warranties, express or implied, on the product or the use of the product and may cause failure, property damage and personal injury. IronRidge is not liable for any unauthorized use. Install and use only with other IronRidge products to ensure proper fit and function.

IT IS THE INSTALLER'S RESPONSIBILITY TO:

- Ensure safe installation of all electrical aspects of the array. All electrical installation and procedures should be conducted by a licensed and bonded electrician or solar contractor. Routine maintenance of a module or panel shall not involve breaking or disturbing the bonding path of the system. All work must comply with national, state and local installation procedures, product and safety standards.
- Comply with all applicable local or national building and fire codes, including any that may supersede this manual.
- Ensure all products are appropriate for the installation, environment, and array under the site's loading conditions.
- Use only IronRidge parts or parts recommended by IronRidge; substituting parts may void any applicable warranty.
- Review the Design Assistant and Certification Letters to confirm design specifications.
- Ensure provided information is accurate. Issues resulting from inaccurate information are the installer's responsibility.
- Validate foundation parameters prior to installation, as a local geotechnical report may be required to assess ground conditions. We recommend consulting with a local engineer familiar with local regulations and build site requirements, including soil conditions, terrain and load criteria. All parameters may impact foundation requirements.
- Ensure bare copper grounding wire does not contact aluminum and zinc-plated steel components, to prevent risk of galvanic corrosion.
- If loose components or loose fasteners are found during periodic inspection, re-tighten immediately. Any components showing signs of corrosion or damage that compromise safety shall be replaced immediately.
- Provide an appropriate method of direct-to-earth grounding according to the latest edition of the National Electrical Code, including NEC 250: Grounding and Bonding, and NEC 690: Solar Photovoltaic Systems.
- Disconnect AC power before servicing or removing modules, AC modules, microinverters and power optimizers.
- Review module manufacturer's documentation for compatibility and compliance with warranty terms and conditions.

RATINGS

UL 2703 LISTED

#5003225
#5036635

Conforms to STD UL 2703 Standard for Safety First Edition: Mounting Systems, Mounting Devices, Clamping/ Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels

- Scope of Evaluation includes bonding, grounding, mechanical loading, and fire classification
- Max Overcurrent Protective Device (OCPD) Rating: 40A
- Max Module Size: 36.8 ft²
- Module Orientation: Portrait or Landscape
- System Design Load Rating: 10 PSF downward, 5 PSF upward, 5 PSF lateral
- Actual system structural capacities and module sizes are defined by PE stamped project plans
- CAMO Specific Design Load rating: 50 PSF downward, 50 PSF upward, 15 PSF lateral, with 30.5 ft² max module size

Certified to CSA TIL No. A-40 Photovoltaic Module Racking Systems

- Load Rating: 2400 PA [50 PSF]
- Max module size: 25.6 ft²

CLASS A SYSTEM FIRE RATING PER UL 2703

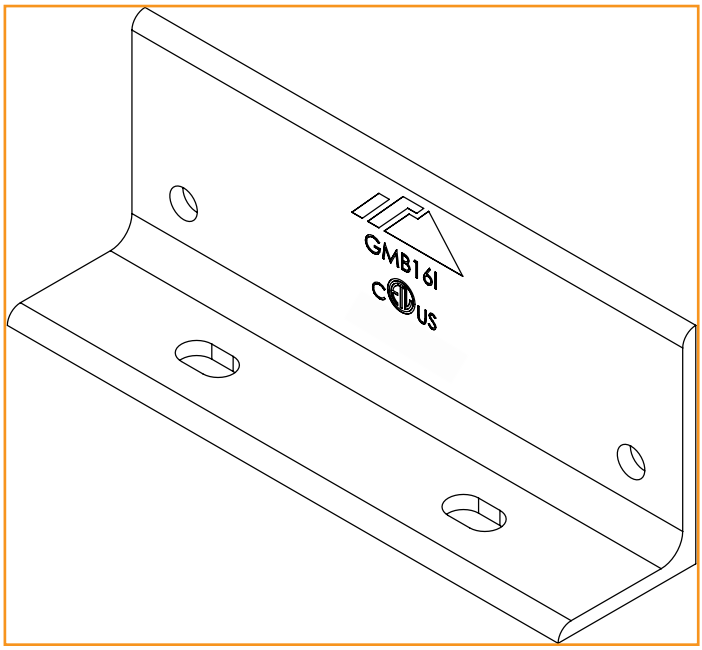
- Not Fire Rated

STRUCTURAL CERTIFICATION

- Designed and Certified for Compliance with the International Building Code & ASCE/SEI-7

MARKINGS

Product markings are located on the system's Rail Connectors.



CHECKLIST

PRE-INSTALLATION

- ☐ Verify module compatibility. See Page 14 for info.
- ☐ Purchase 2” or 3” Pipe or Mechanical Tubing

Pipe: 2” or 3” (NPS) ASTM A53 Grade B SCH 40 Pipe, galvanized to a min of ASTM A653 G90 or ASTM A123 G35.
Mechanical Tubing: 2.375” x 12 ga (O.D) or 3.500” x 8 ga (O.D.) Mechanical Tubing with one of the following Galvinizations (ASTM A1057).

- Allied Gatorshield
- Allied Flo-Coat Coating
- Wheatland ThunderCoat

TOOLS REQUIRED

- ☐ Post Hole Digger or Powered Auger
- ☐ Socket Drive (7/16”, 9/16”, 15/16” and 1/2” Sockets)
- ☐ Torque Wrenches (0-300 in-lbs and 10-40 ft-lbs)
- ☐ Transit, String Line, or Laser Level
- ☐ 3/16” Allen Head

TORQUE VALUES

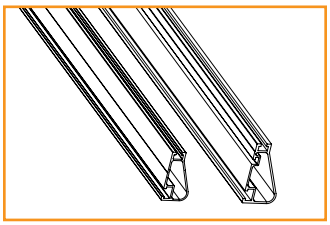
Top Cap Set Screws (3/16” Allen Head)

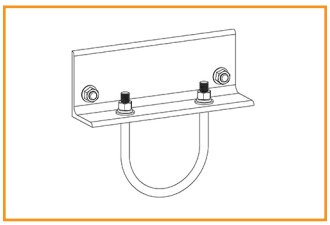
- ☐ 2” or 3” NPS Schedule 40 Grade B Pipe: 20 ft-lbs
- ☐ 2.375” x 12 ga OD Mechanical Tubing: 11 ft-lbs
- ☐ 3.500” x 8 ga OD Mechanical Tubing: 16 ft-lbs

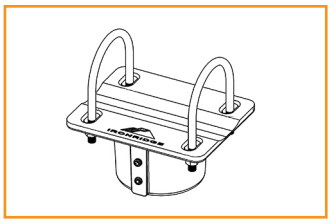
- ☐ For Ground Screw to Pipe Connection Hardware see Page 5.
- ☐ Top Cap U-Bolt Nuts (9/16” Socket): 15 ft-lbs
- ☐ Rail Connector Bracket Nuts (7/16” Socket): 30 ft-lbs
- ☐ Rail Connector U-Bolt Nuts (9/16” Socket): 60 in-lbs
- ☐ Rail Grounding Lug Nut (7/16” Socket): 80 in-lbs
  - ☐ Rail Grounding Lug Terminal Screws (7/16” Socket): 20 in-lbs
- ☐ Module Grounding Lug Nut (3/8” Socket): 60 in-lbs
  - ☐ Module Grounding Lug Terminal Screws (1/2” Socket): 20 in-lbs
- ☐ Universal Fastening Objects (7/16” Socket): 80 in-lbs
- ☐ End Fastening Objects (7/16” Socket): 80 in-lbs
- ☐ Diagonal Brace Set Screws (1/2” Socket): 15 ft-lbs
- ☐ Diagonal Brace Bolts (1/2” Socket): 40 ft-lbs
- ☐ Microinverter Kit Nuts (7/16” Socket): 80 in-lbs

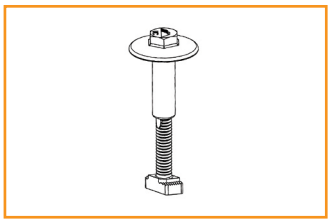
- **If using previous version of: Integrated Grounding Mid Clamps, Grounding Lug and End Clamps please refer to Alternate Components Addendum (Version 2.4).**
- **If installing on a low slope roof please refer to Ground Mount for Flat Roof Applications Addendum (Version 4.70).**
- **Unless otherwise noted, all components have been evaluated for multiple use. They can be uninstalled and reinstalled in the same or new location.**
- ***CAMO is not intended for installation on any island or within 3 miles from any coastline and 2 miles from saltwater bays and inlets. CAMOs installed in these regions will not be covered by the IronRidge Product Warranty. Refer to IronRidge Design Assistant for installation applicability.**

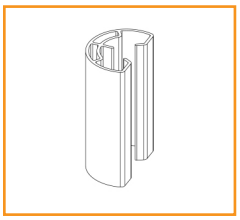
IRONRIDGE COMPONENTS

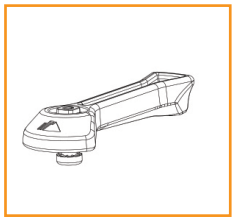

XR100 & XR1000 Rail

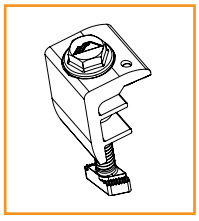

Rail Connector

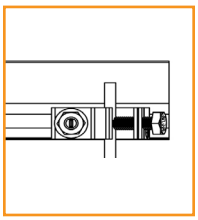

Top Cap

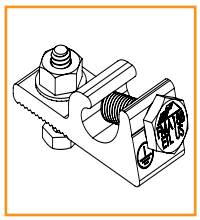

UFO (30-46mm)

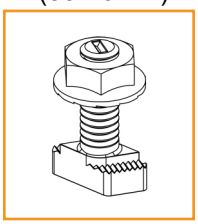

Stopper Sleeve

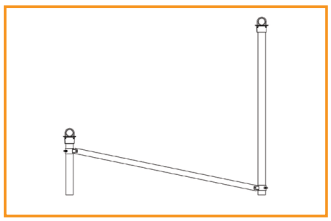

CAMO


EFO (30-40mm)


Rail Grounding Lug

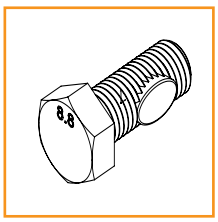

Module Grounding Lug

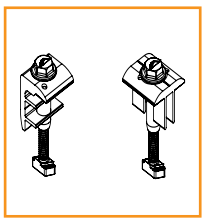

Microinverter Kit

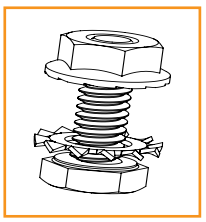

Diagonal Brace

End Cap

Wire Clip


Hex Head Set Screw

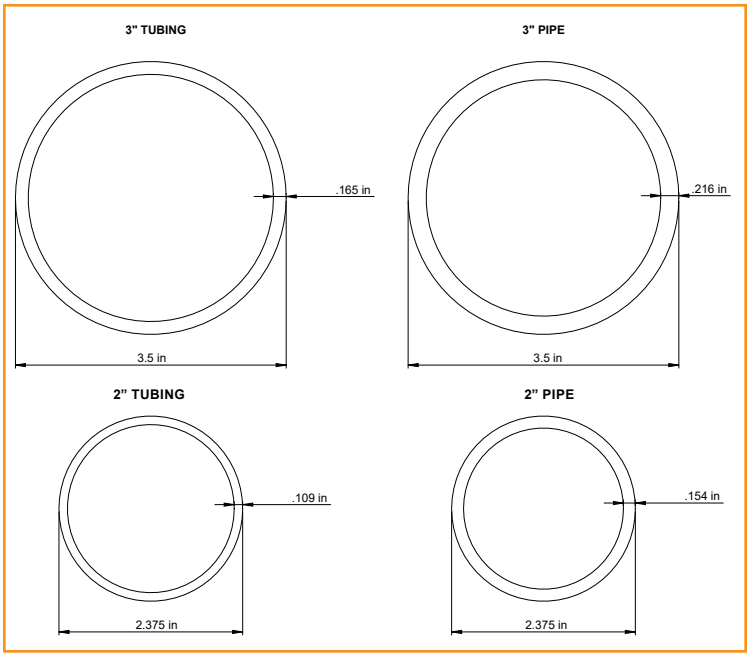

UFO - US
EFO - US


Microinverter Kit US

PIPE SPECIFICATIONS

TESTED AND EVALUATED PIPE AND TUBE

Approved 2”	Approved 3”
MECHANICAL TUBE 12 GA • 50 KSI YIELD STRENGTH • GALVANIZED (ALLIED FLO-COAT, ALLIED GATORSHIELD OR WHEATLAND THUNDER COAT) TOP CAP SET SCREW INSTALL TORQUE: 11-FTLBS	**MECHANICAL TUBE 8 GA** • 45 KSI YIELD STRENGTH • GALVANIZED (ALLIED FLO-COAT, ALLIED GATORSHIELD OR WHEATLAND THUNDER COAT) TOP CAP SET SCREW INSTALL TORQUE: 16-FTLBS
SCHEDULE 40 GR B PIPE • ASTM A53 GR B • 35 KSI YIELD STRENGTH • HOT DIPPED GALVANIZED TOP CAP SET SCREW INSTALL TORQUE: 20-FTLBS	**SCHEDULE 40 GR B PIPE** • ASTM A53 GR B • 35 KSI YIELD STRENGTH • HOT DIPPED GALVANIZED TOP CAP SET SCREW INSTALL TORQUE: 20-FTLBS

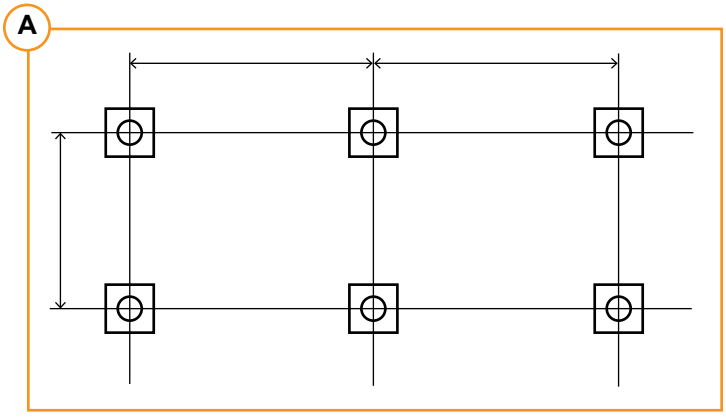


1. BUILD BASE

A. MARK LOCATIONS

Establish pier locations. Once grid of pier locations has been set, verify all angles are square.

➢ **Spacing varies with load conditions. Consult engineering specs.**

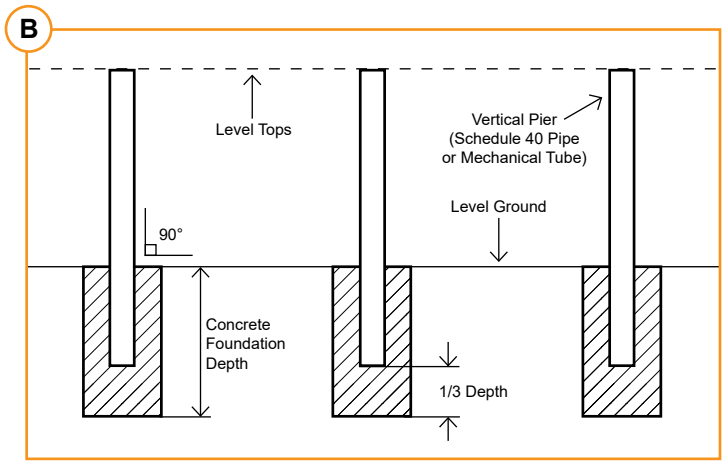


B. POSITION PIERS CONCRETE FOUNDATIONS

Excavate the foundation holes. Insert vertical piers into foundation holes, and pour in concrete mixture. Ensure vertical piers are plumb, level, square, and placed in parallel rows. Level the tops so they are even.

➢ **Brace piers until concrete foundation has cured.**

➢ **In some cases, cross bracing is required to provide extra support for piers. If required, install Diagonal Braces at this time.**



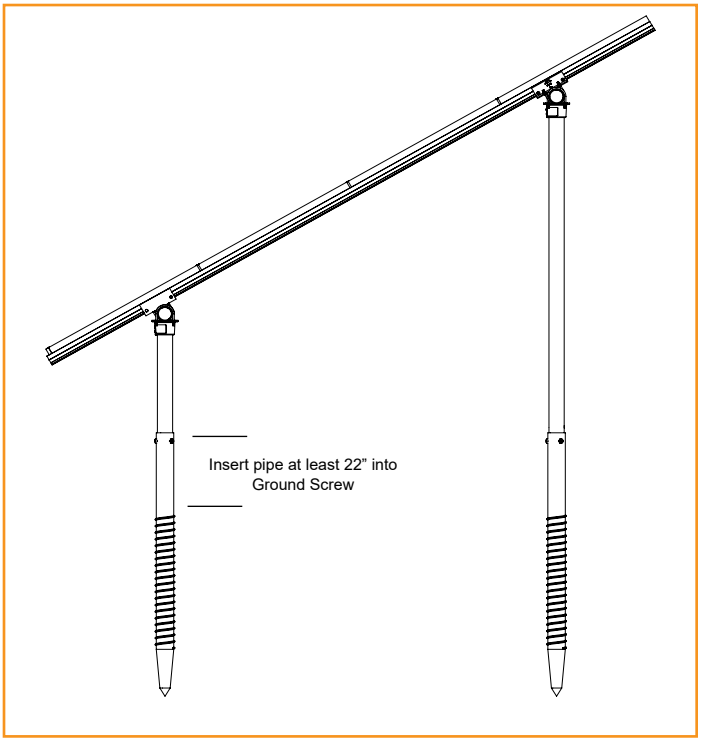
GROUND SCREW FOUNDATIONS

Follow respective Ground Screw Manufacturer's installation methods for driving screws into soil. Insert vertical piers into ground screws, ensuring at least 22" of pier is inserted into ground screw.

Tested and/or Evaluated Ground Screws

	2" System	3" System
Manufacturer Model #	American Ground Screw Model 3 76mm x 3(+)mm	American Ground Screw Model 3 102mm x 3.75(+)mm
	Krinner North America KSF G76	Krinner North America KSF G114
Set Screw Torque Specification	SCHD. 40: 90 ft-lb	SCHD. 40: 120 ft-lb
	Mech. Tubing: 75 ft-lb	Mech. Tubing: 90 ft-lb

- **A minimum ground screw length of 1300mm must be used for either ground screw manufacturer. Longer lengths may be required in areas with high wind and snow loads or risk of freeze-thaw heaving. Check with your local jurisdiction for frost line embedment requirements.**
- **Hex Head Set Screw must be M16-2.0 x 40mm hot-dip galvanized bolts.**



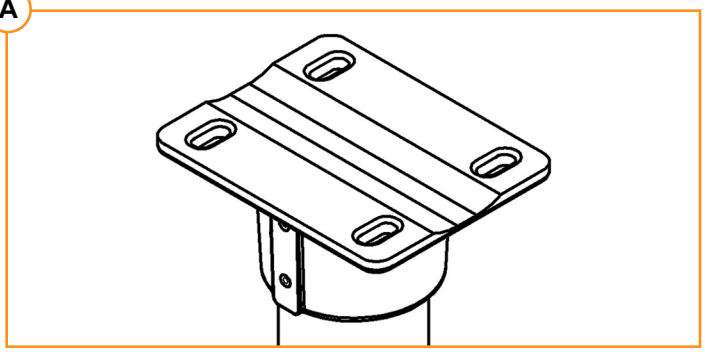
2. CONNECT SUBSTRUCTURE

A. MOUNT TOP CAPS

Mount a Top Cap on each vertical pier. Wait to tighten set screws.

- **If using Diagonal Braces, install them prior to Top Caps.**
- **Do not install Top Caps on threaded pipe ends.**

A



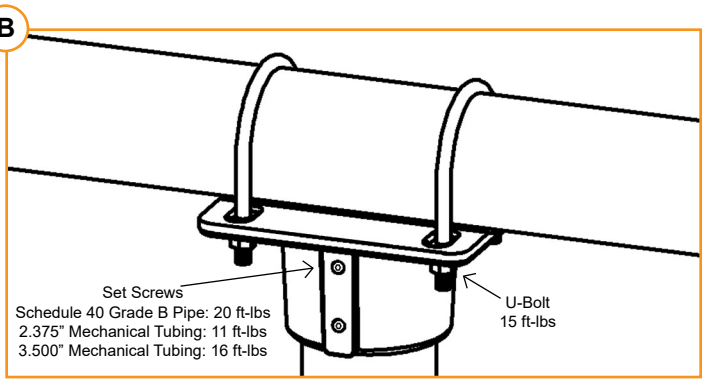
B. LAY HORIZONTAL BEAMS

Set horizontal beams(Pipe or Mechanical Tubing) in Top Cap grooves. Attach with 3/8" U-bolts, Flange Nuts, Flat Washers and Lock Washers. Alternate each side when tightening to avoid warping U-bolts. Torque U-bolts to **15 ft-lbs** and align assembly.

Torque Top Cap set screws to **20 ft-lbs** for Schedule 40 Grade B Pipe, **11 ft-lbs** for 2.375" x 12 ga Mechanical Tubing, and **16 ft-lbs** for 3.500" x 8 ga Mechanical Tubing.

- **To join more than one section of horizontal beams, see Page 10.**
- **Ensure both U-bolts are installed on every Top Cap.**

B

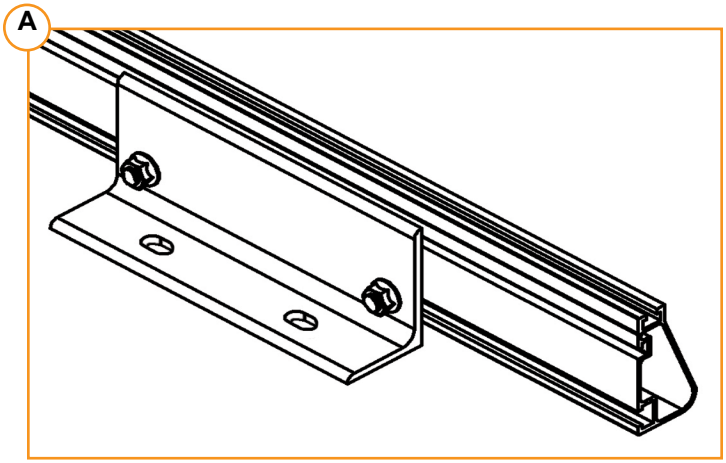


3. PLACE RAILS

A. ATTACH HARDWARE

On the ground, attach Rail Connector brackets to rail by sliding 3/8” bonding bolts into side slot. Space out to match vertical pier spacing. With brackets in place, finger tighten Flange Nuts onto bolts.

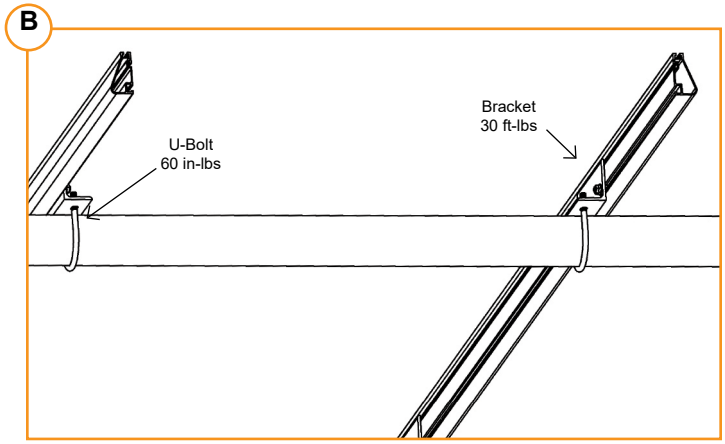
- **Tape ends of rail, to keep bolts from sliding out while moving.**
- **Rail Connector should be located at least flush with pipe end.**



B. FASTEN CONNECTORS

Center Rails on horizontal beams, leaving equal distance on ends. Secure with Rail Connector hardware: 3/8”-16 U-bolts, Flange Nuts, Flat Washers and Lock Washers. Alternate each side when tightening to avoid warping U-bolts. Torque U-bolt nuts to **60 in-lbs** and bracket to **30 ft-lbs**.

- **Spacing between rails should align with module manufacturer**



4. SECURE LUGS

Grounding Lugs

Only one Grounding Lug (Rail or Module) required per continuous subarray, regardless of subarray size (Unless frameless modules are used, see Page 13).

- **Grounding Lugs are intended to for use with one solid or stranded copper wire, conductor size 14-4 AWG.**

Rail Grounding Lug

Insert T-bolt in Top Rail slot and torque Hex Nut to **80 in-lbs**. Install a minimum 14 AWG solid copper or stranded grounding wire. Torque terminal screw to **20 in-lbs**.

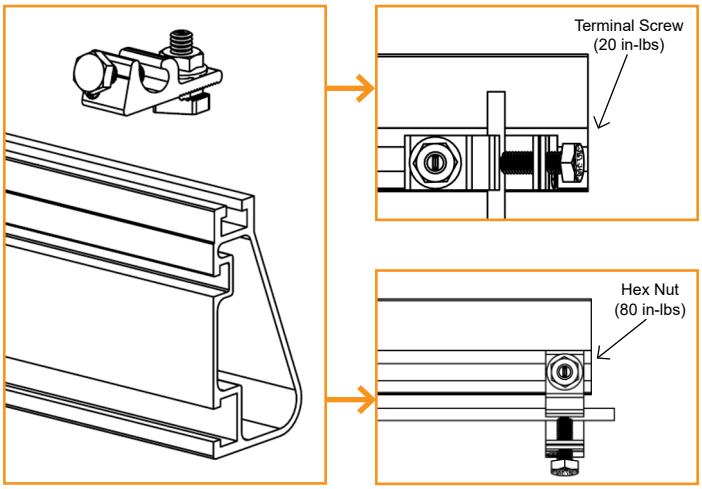
- **Rail Grounding Lugs can be installed anywhere along the Rail and in either orientation shown.**

Module Grounding Lug

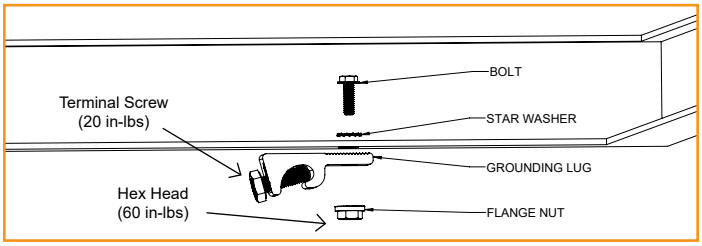
Insert Bolt through Module Manufacturer approved grounding location and torque Hex nut to **60 in-lbs.** One Module Grounding Lug may be installed to one module per continious array. Install a minimum 14 AWG solid copper or stranded grounding wire. Torque terminal screw to **20 in-lbs**.

- **Refer to module manufacturer manual for grounding instructions.**

Rail Grounding Lug



Module Grounding Lug



5. SECURE MODULES

A. SECURE FIRST END

Place first module in position on rails, a minimum of 1” from rail ends. Snap Stopper Sleeves onto UFO. Fasten module to rail using the UFO or EFO, ensuring that the clamp is hooked over the top of the module. Torque to **80 in-lbs**.

- **Ensure rails are square before placing modules.**
- **Hold Stopper Sleeves or EFO on end while torquing to prevent rotation.**
- **If using CAMO instead of UFO + Stopper Sleeve, refer to Page 7 for CAMO installation procedure.**
- **UFO can be installed on modules 30 to 46mm.**
- **EFO can be installed on modules 30 to 40mm.**

B. SECURE NEXT MODULES

Place UFO into each rail, placing them flush against first module. Slide second module against UFO. Torque to **80 in-lbs**. Repeat for each following module.

- **When reinstalling UFO, move modules a minimum of 1/16” so UFOs are in contact with a new section of module frame.**
- **When UFOs are loosened and re-tightened, ensure UFO T-bolt bottoms out in rail channel before re-torquing UFO to achieve full engagement between T-bolt and rail.**
- **If using Wire Clips, refer to Page 9.**

C. SECURE LAST END

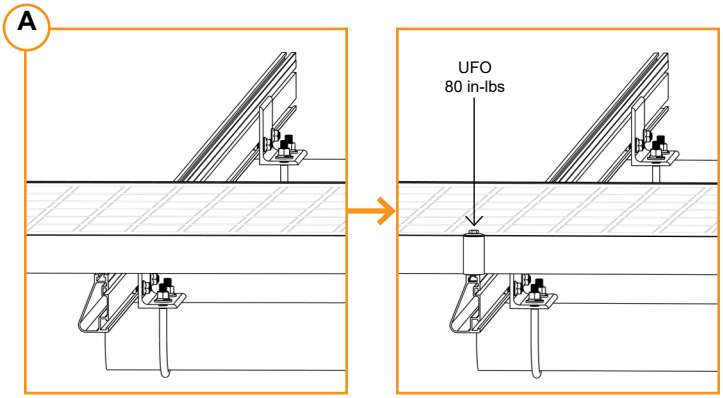
Place last module in position on rails, a minimum of 1” from rail ends. Snap Stopper Sleeves onto UFO. Secure UFO or EFO Clamps on rails, ensuring they are hooked over top of module. Torque to **80 in-lbs**.

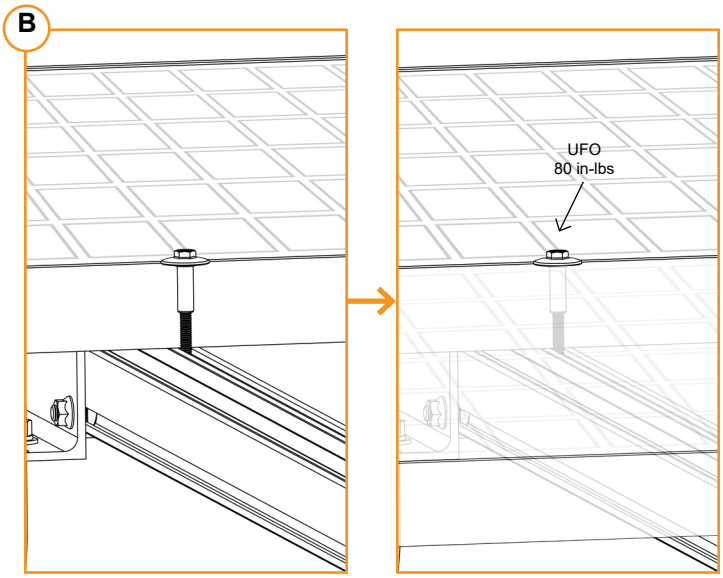
- **Hold Stopper Sleeves or EFO on end while torquing to prevent rotation.**
- **If using CAMO instead of UFO + Stopper Sleeve, refer to Page 7 for CAMO installation procedure.**

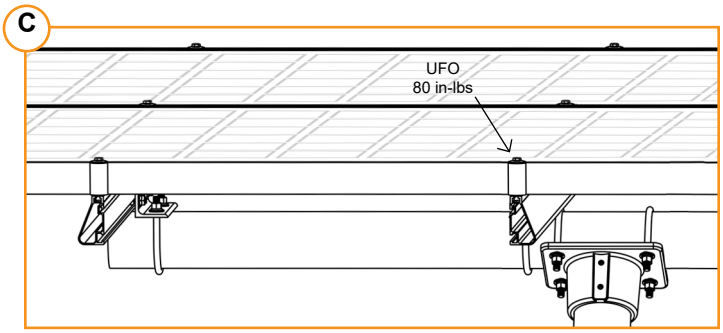
D. REPEAT STEPS

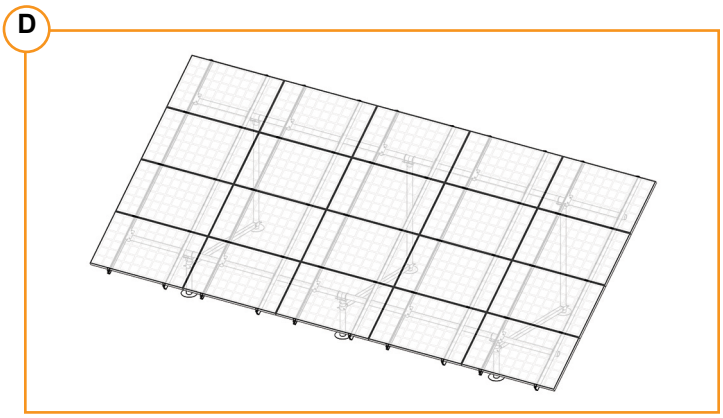
Secure remaining module rows, leaving a minimum 3/8” gap between rows.

- **If using End Caps, refer to Page 9.**



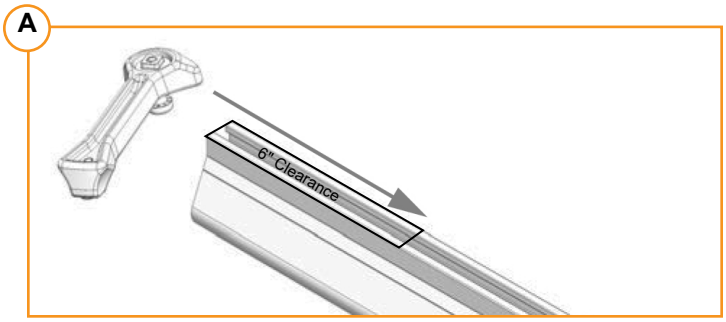






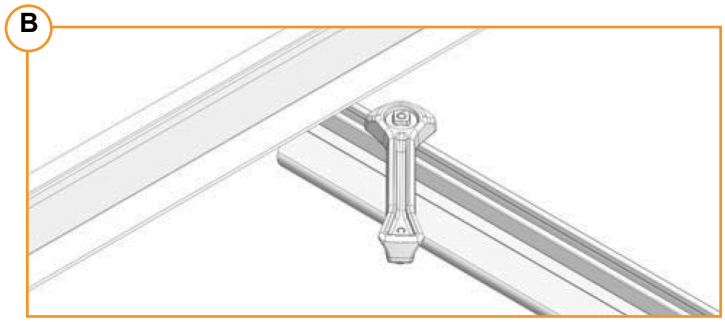
A. SLIDE INTO RAIL

Slide CAMO into rail channel far enough to clear the module frame. CAMO requires 6" of clearance from end of rail.



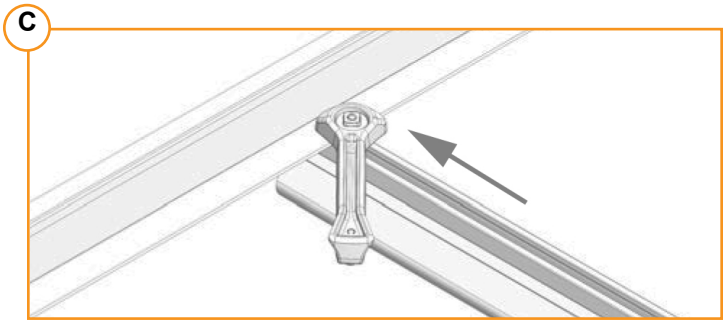
B. PLACE MODULE

Place module on rails (module cells not shown for clarity). When installing CAMO the module can overhang the rail no more than 1/4”.



C. PULL TOWARDS END

Pull CAMO towards rail ends, at 45 degree angle, so the bonding bolt contacts the module flange edge.

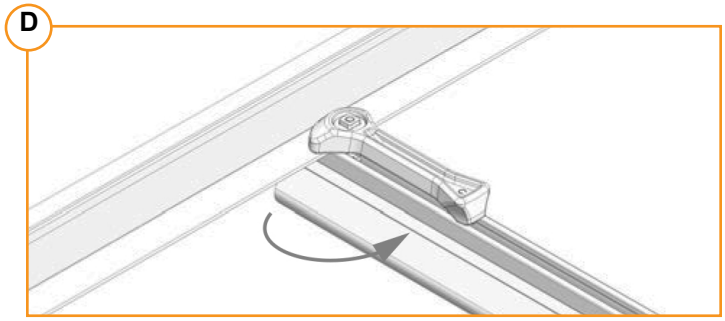


D. SECURE TO FRAME

Rotate handle with an upwards motion until CAMO snaps into rail channel. Ensure CAMO bonding pins are fully seated on top of module frame.

- ***CAMO is not intended for installation on any island or within 3 miles from any coastline and 2 miles from saltwater bays and inlets. CAMOs installed in these regions will not be covered by the IronRidge Product Warranty.**

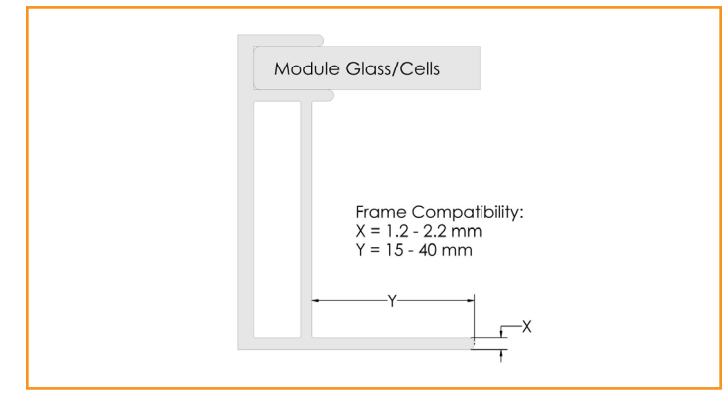
  Refer to IronRidge Design Assistant for installation applicability



FRAME COMPATIBILITY

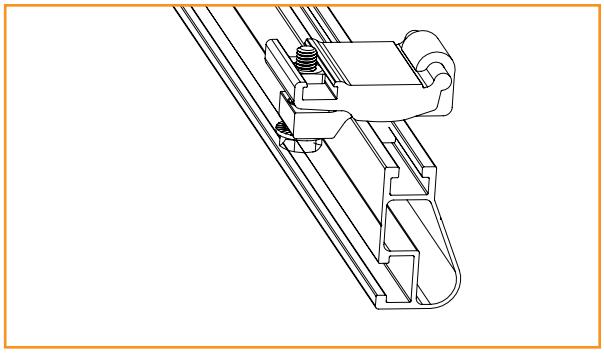
CAMO has been tested or evaluated with all modules listed in the Module Compatibility section having frames within the referenced dimensions. Be sure the specific module being used meets the dimension requirements.

- **For installations with Hanwha Q CELLS modules with 32 mm frame heights, the maximum ground snow is 45 PSF (33 PSF module pressure).**
- **CAMO is only compatible with Canadian Solar modules CS1YxxxMS, CS3N-xxxMS, CS6R-xxxMS-HL and CS6W-xxxxMB-AG. “xxx” refers to the module power rating.**



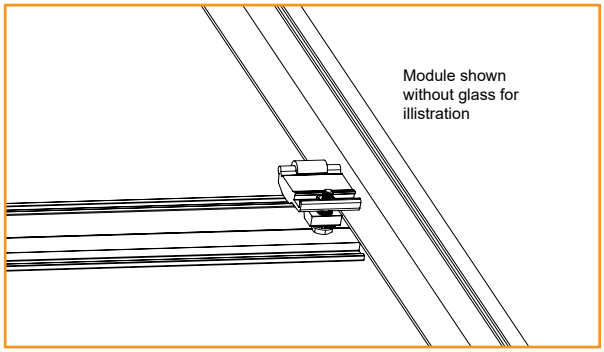
A) Align Eclipse and slide into the top channel of the XR Rail far enough to clear the module frame.

- Note the head of the bolt should be facing towards the roof.
- It's easiest to orient the Eclipse so that the head of the bolt is on the flat side of the rail.



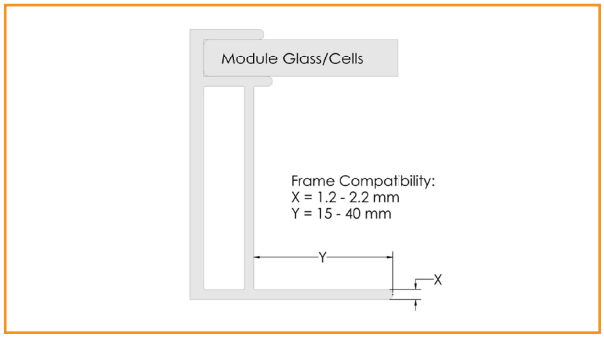
B) Place module on rails, then pull the Eclipse towards the module frame so the upper part of the Eclipse is resting on the module flange

- Because of XR's triangular profile, if the Eclipse is oriented so the head of the bolt is on the angled side, a crescent wrench will most likely be needed to tighten the clamp and secure the module.



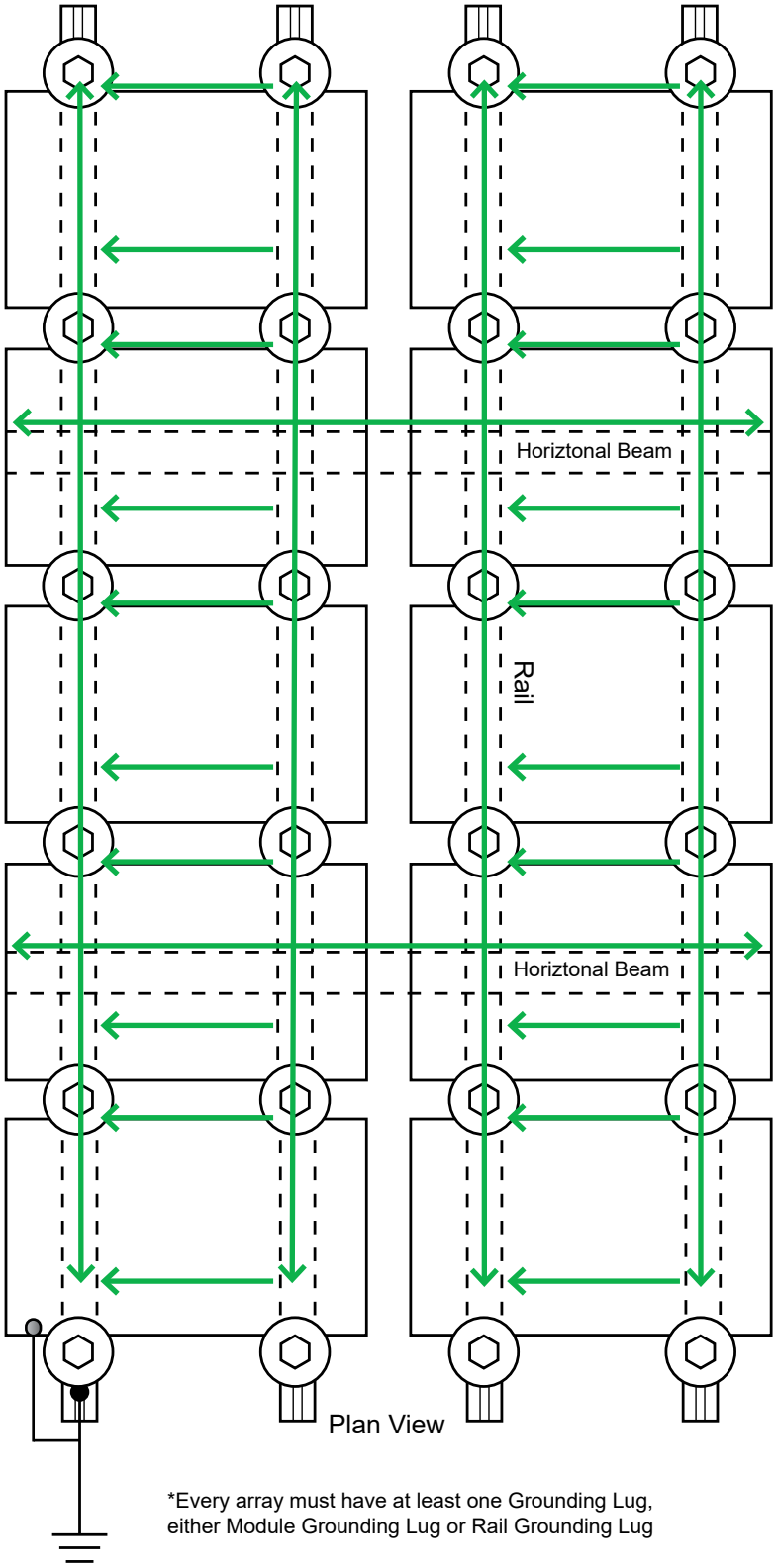
C) Secure the module by tightening the hex bolt with a 7/16" socket to 80 in-lb.

- IR Recommends using a cordless ratchet tool for optimal installation speed
- A ratcheting crescent wrench is also a good option.



Note: Eclipse does not provide electrical bonding for the module. For standalone module installations, the module and rails shall be grounded.

ELECTRICAL DIAGRAM



Plan View

*Every array must have at least one Grounding Lug, either Module Grounding Lug or Rail Grounding Lug

Bonding Points ← Fault Current Ground Path

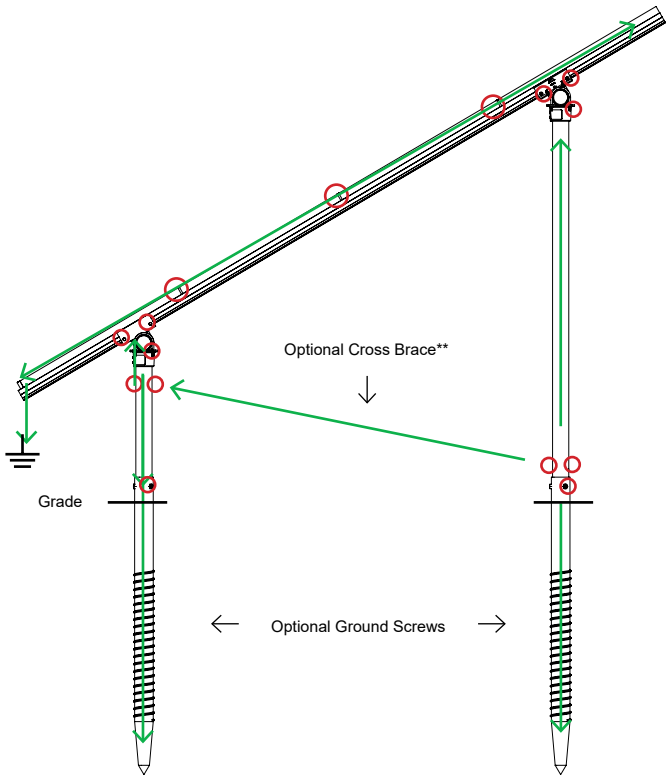
● Rail Grounding Lug*
Or
● Module Grounding Lug*

UFO or CAMO

● Rail Grounding Lug*
or
● Module Grounding Lug*

→ Fault Current Ground Path

⊥ Min 10 AWG* Copper Wire



Bonding Points ← Fault Current Ground Path

Section View

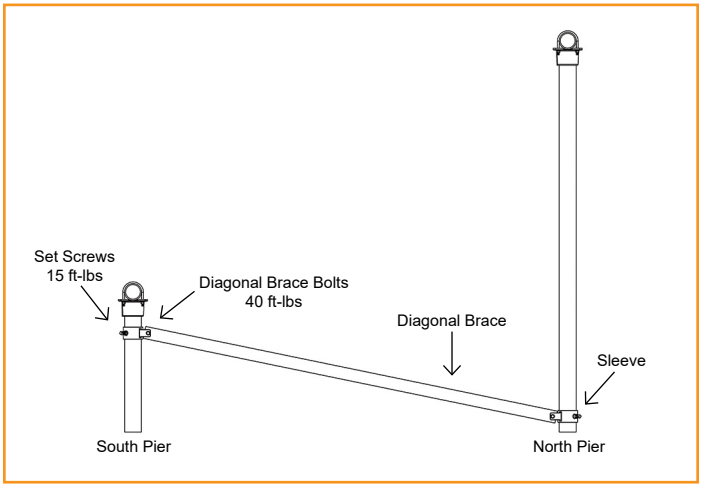
**Cross Braces are optional for concrete foundation systems.

DIAGONAL BRACES (OPTIONAL)

Slide sleeve on north pier 2-3” above the ground (6” max). Attach Diagonal Brace to sleeve with 1/2” hardware.

Slide second sleeve up on south pier 2-3” below top cap (6” max). Raise Diagonal Brace to align holes in sleeve and brace. Attach hardware and raise sleeve to full extent.

Torque Diagonal Brace bolts to **40 ft-lbs**. Torque set screws to **15 ft-lbs**.

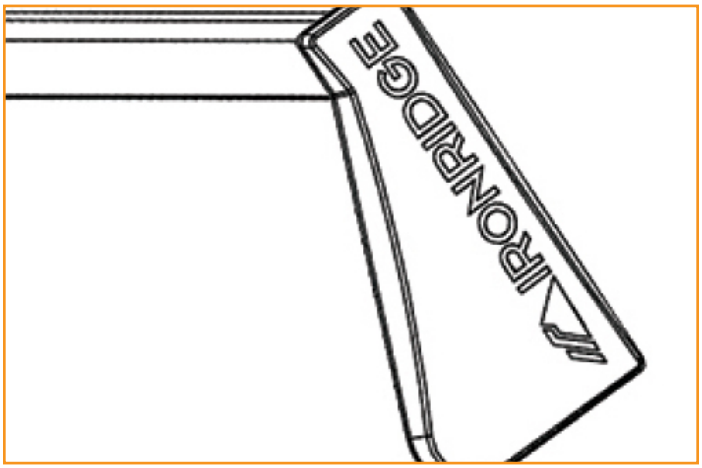


END CAPS

End Caps add a completed look and keep debris and pests from collecting inside rail.

Firmly press End Cap onto rail end.

- **End Caps come in sets of left and right. Check that the proper amount of each has been provided.**
- **For open-structure installations, you can use adhesive to secure the End Caps.**

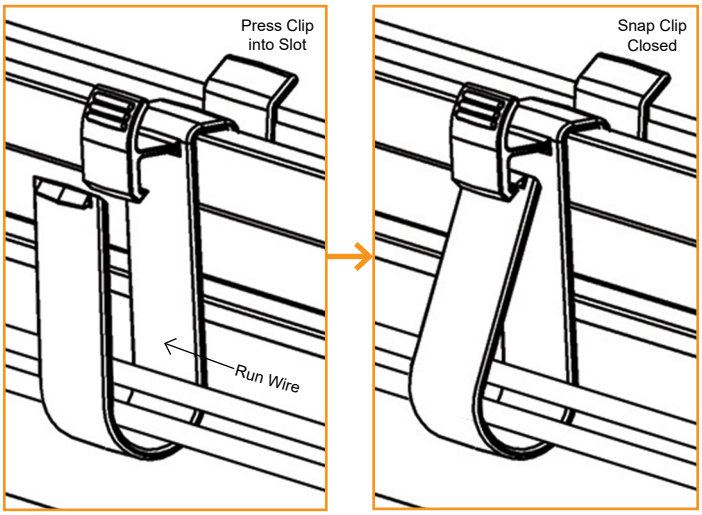


WIRE CLIPS

Wire Clips offer a simple wire management solution.

Firmly press Wire Clip into top rail slot. Open clip and insert electrical wire accordingly. Close clip once complete.

- Wire Clip fits up to quantity 10 - 10 AWG PV Wire or equivalent bundled diameter.



SPLICING CROSS PIPE

The following instructions should be followed, when required, to join more than one section of horizontal beam together to ensure bonding is maintained throughout the system.

A. MECHANICAL TUBING SPLICES

Mechanical tube splices shown in the table below shall be of equivalent Allied Flo-Coat, Allied Gatorshield or Wheatland ThunderCoat coating.

Mechanical Tube Size of the Structure	Splice Tube Size
2.375” OD, 12 Gauge	2.000” OD, 9 Gauge, Minimum 12” Long
3.500” OD, 8 Gauge	3.000” OD, 12 Gauge, Minimum 12” Long

Insert splice tube 6” into first section of cross tube and secure with 2 self-drilling screws (1/4”-14 x ¾”), spacing them approximately 1.25” from end of pipe and approximately 3.50” apart, tightening screws to 9 ft-lbs.

Slide second section of cross tube over splice tube and secure with two more self-drilling screws. Tighten screws to 9 ft-lbs.

- **Pre-drill 5/32” pilot holes through cross tube and splice tube for easier installation of self-drilling screws.**

B. SCHEDULE 40 GRADE B PIPE SPLICES

Use galvanized threaded pipe couplings that match the pipe size used for the structure. Threaded Schedule 40 Grade B Pipe must be used when splicing cross pipe together.

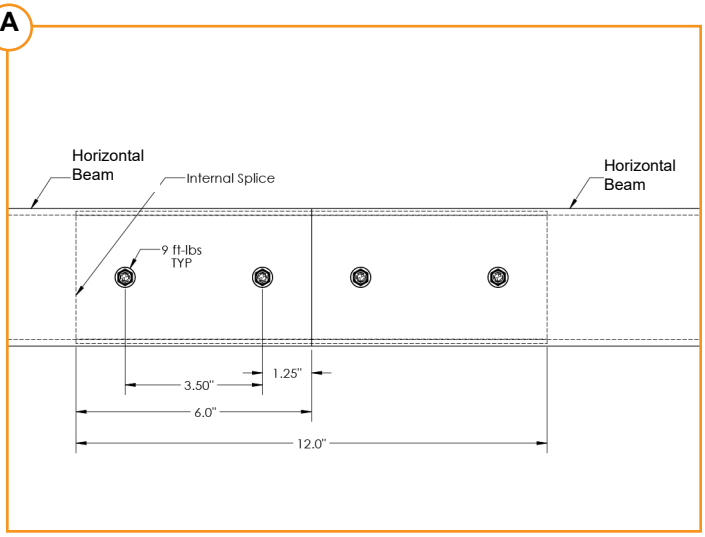
Fully thread coupling onto both sections of pipe being spliced together.

- **Splice cannot be installed in the cantilever, center 1/3 of interior spans, or the outer 2/3 of end spans.**

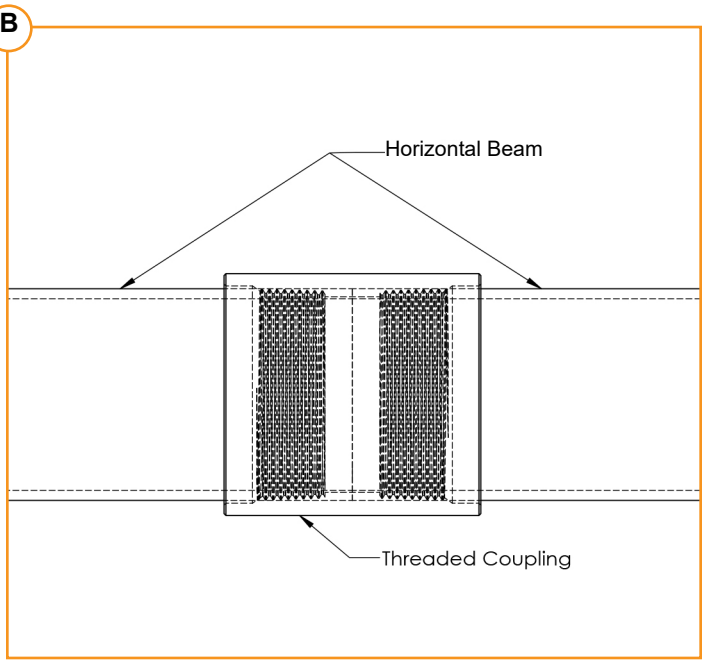
C. HORIZONTAL PIPES CAN BE JOINED OVER AN INTERIOR TOP CAP WITH A MAXIMUM GAP OF 1/2”

- **To avoid potential problems from the effects of thermal expansion, a maximum total continuous cross pipe length of 100 ft is recommended.**

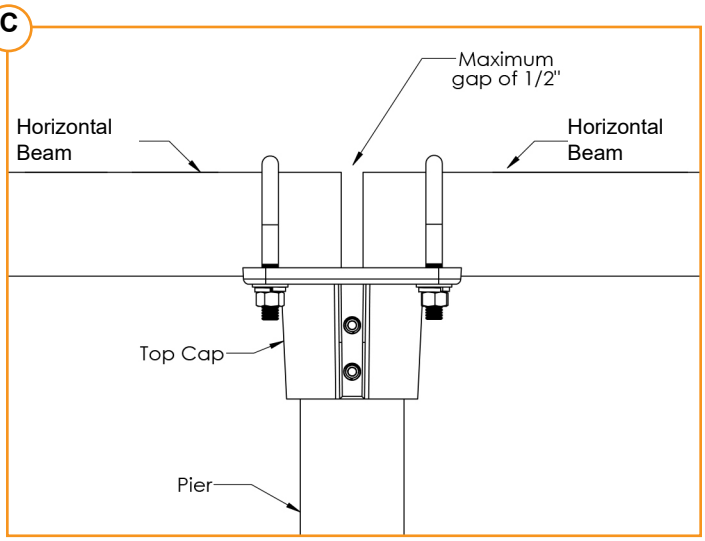
A



B



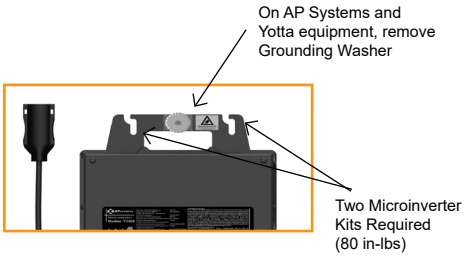
C

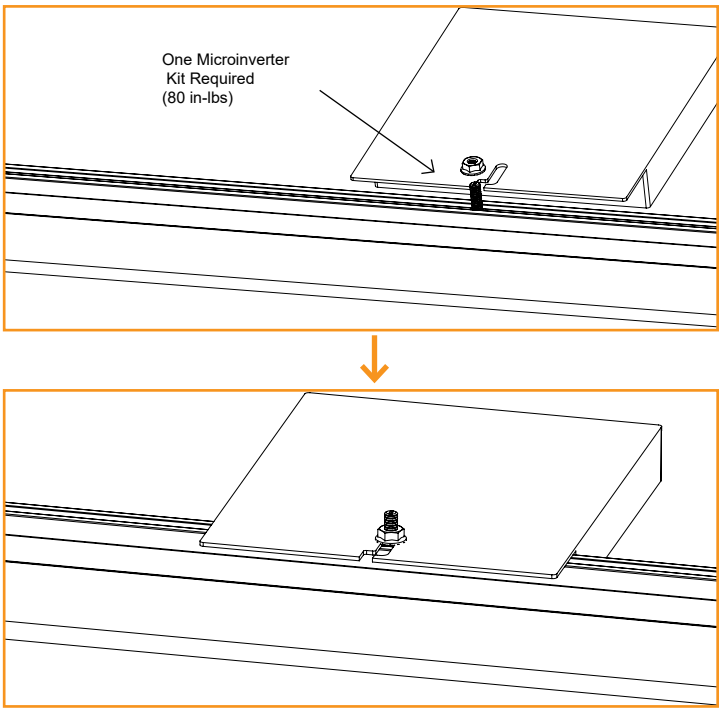


MICROINVERTER KITS

Use IronRidge's Microinverter Kit to bond compatible microinverters and power optimizers to the racking system. Insert Microinverter Kit T-bolt into top rail slot. Place compatible microinverter or power optimizer into position and tighten hex nut to **80 in-lbs**.

- **MLPE devices shall be installed near modules frames whenever possible.**

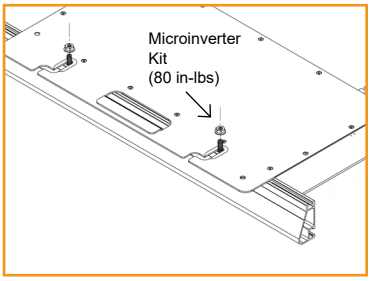




- **Remove Grounding Washer on AP Systems QS1, QS2, QT2, DS3 and YC600 and Yotta inverters before installing to XR rails.**
- **Remove the Stainless Steel Clip on Tigo-"A" MLPE Devices before attaching to XR rails.**
- **Do not remove clips from AP systems Rapid Shutdown Devices.**
- **Use the number of IronRidge Microinverter kits allowed by the MLPE mounting flange. Some will require 1 kit and others 2 kits.**

SYSTEMS USING MICROSTORAGE PRODUCTS

Use IronRidge's Microinverter Kit to bond compatible microstroage devices to the racking system. Insert Microinverter Kit T-bolt into top rail slot. Place compatible microstorage into position and tighten hex nut to **80 in-lbs**. Or install Bonding hardware into side slot and tighten Hex Nut to **300 in-lbs.**



Compatible Products

PHAZR

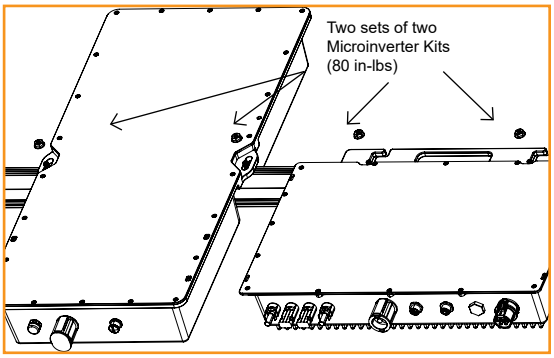
PHAZR Devices PHAZR-X, where X is 6-12.

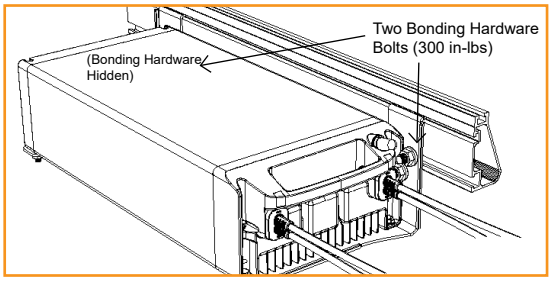
Solpad

Solpad Inverter model SI-1k
Solpad Battery Storage model SB-2K
Solpad Junction Box model SJB-4k

Yotta

YB-1





- **Running a separate equipment grounding conductor to the PHAZR or Solpad devices is not required.**
- **If installing in areas with ground snow loads greater than 40 psf and underneath a module, install PHAZR and Solpad devices as close as possible to module frame edge.**
- **Solpad may only be installed on XR-100 and XR-1000**
- **Solpad may only be installed with modules having a frame thickness of 35mm or greater.**
- **Use the number of IronRidge Microinverter kits allowed by the microstorage mounting flange. Some will require 1 kit and others 2 kits.**
- **Yotta YB-1 may only be installed on XR-1000.**
- **Yotta YB-1 requries use of the Yotta 310-00132 Bracket with 2 XR Bonding Hardware on XR-1000 Rail. It is reccomended to install the device as close as possible to attachments.**
- **For complete instructions refer to Yotta Installation Manuals**

XR MLPE MOUNT APPROVED MLPE

AP Systems	DS3, DS3-H, DS3-L, DS3-S, QS1, QS2, QT2, QT2-208, QT2-480 and YC600 Rapid Shutdown Devices: RSD-S-PLC and RSD-D-20* *Frame or rail mount only. Do not remove clip"
Darfon	MIG240, MIG300, G320, G640
Duracell	D350-M1, D350-M1A-xxx, D400-M1A-xxx, D600-M2A-xxx, D700-M2, D800-M2A-xxx, D1500-M4 Where "xxx" can be blank, 208A or 240A
Enphase	M250-72, 250-60, M215-60, C250-72, S230, S280, IQ 6, IQ 6+, IQ7, IQ 7A, IQ 7+, IQ7 PD, IQ 7X, Q Aggregator; IQ8-60, IQ8PLUS-72, IQ8A-72, IQ8AC-72, IQ8H-3P-72, IQ8H-208-72, IQ8H-240-72, IQ8HC-72, IQ8M-72, IQ8MC-72, IQ8P-72, IQ8P-3P-72, IQ8X-80, IQ9N; may be followed by -A-US, -A-DOM-US, -3P-277-A-US,-3P-277-A-DOM-US, -2-US, -E-US, -M-US, or M-DOM US
Generac	S2502, PM-820
Hiitio	HCM300/400/500SN HCM300/400/500WN HCM600/800/1000SN HCM600/800/1000WN HCM1600/1800/2000SN HCM1600/1800/2000WN
Hoymiles	HMA-xxxYY-ZZ where "A" can be blank or S, xxx can be 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1200, 1500, 1600, 1800 or 2000; "YY" can be NT, 1T, 2T, 4T; and "ZZ" can be blank, NA or 208-NA
Hyxi Power	HYX-M300/400/500-S-NA HYX-M300/400/500-SW-NA HYX-M600/800/1000-S-NA HYX-M600/800/1000-SW-NA HYX-M1600/1800/2000-S-NA HYX-M1600/1800/2000-SW-NA
Lunar Energy	Maximizer 10-005220 or 10-00522D
NEP Microinverters	BDM-xxx-yyy Where "xxx" can be 300, 300X2, 350, 400, 500, 550, 650, 800, 1000, 1200, 1600 or 2000; and "yyy" can be blank, 208A or 240A
NEP Rapid Shutdown	PVG-1, PVG-2, PVG-3, PVG-4
SMA	RoofCommKit-P2-US, TS4-R Module Retrofit Kits (TS4-R-S, TS4-R-O, TS4-R-F)
Solar Edge	C651U, C652U, M1600, P300, P320, P340, P370, P400, P401, P405, P485, P505, P600, P700, P730, P750, P800p, P800s, P801, P850, P860, P950, P960, P1100, P1101, S440, S500, S500B, S650B, S1200, S1201, U650 and U650B
Spitzer Energy	SPZ-M800-S, SPZ-M1000-S
Tigo	Tigo Access Point (TAP) TS4-R-X (where X can be F, M, O, or S) TS4-R-X-DUO (where X can be M, O, or S) TS4-A-X, TS4-X-F, TS4-X-O, TS4-X-S (where X can be F, 2F, O, O-DUO, or S)
Yotta	DPI 208/480

MODULE COMPATIBILITY

The Ground Mount System has been tested and evaluated to UL 2703 for bonding, grounding, mechanical loading and fire classification, and may be used to ground and/or mount PV modules listed to UL 1703 or UL 61730. A list of approved modules is included below. Unless otherwise noted, “xxx” refers to the module power rating and both black and silver frames are included in the certification.certification.

Framed Module List	
Make	Models
Adani	Adani modules with 30, 35 and 40 mm frames ASX-Y-ZZ-xxx Where "S" can be blank or S; "X" can be B, M or P; "Y" can be 7, G12R or M10; and "ZZ" can be blank, 132, 144 or PERC
AIONRISE	Aionrise modules with 35 and 40 mm frames AIONyyG1-xxx Where "yy" can be 60 or 72
AMPS	AMPS modules with 30 and 35 mm frames AMPS-xxxY-ZZZ Where "Y" can be N or P; and "ZZZ" can be 54BB or 108BB
Aptos Solar	Aptos modules with 30, 35 and 40 mm frames DNA-yy-zzaa-xxxbb Where "yy" can be 108, 120 or 144; "zz" can be BF, BFN, MF or MFN; "aa" can be 10 or 26; and "bb" can be blank, W, W-DG, W-USAptos1, W-USAptos1a or W-USAptos2
Astronergy Solar	Astronergy modules with 30, 35 and 40 mm frames CHSMbbyyZZZ-xxx Where "bb" can be 60, 66 or 72; “yy” can be blank or 12; "ZZZ" can be HC, M, M(DG)/F-B, M(DG)/F-BH, M/HV, N(DG)/F-BH, P, P/HV or RN(DG)/F-BH
Auxin	Auxin modules with 35 and 40 mm frames AXNCyzAxxxB Where "C" can be 6, 10 or G1; "y" can be M or P; "z" can be blank, 08, 09, 610, 11, or 612; and "A" can be blank, F, M or T; and "B" can be blank, A, B, C or W
Axitec	Axitec Modules with 30, 35 and 40 mm frames AC-xxxZZ/yyy Where "ZZ" can be MH, MB, MBT or TGB; and "yyy" can be 96BB, 108BB, 108BB-US, 108V, 108VB, 144S, 144US, 144TS, 144TS-US, 144WS-US, 144V or 144VB
Big Shine Solar	Big Shine Solar modules with 35mm frames BSExxxN-144BMH-DG
Bila Solar	Bila Solar modules with 30 mm frames AA-xxxUS-6x24GG
Bluesun Solar	Bluesun modules with 30 and 35 mm frames BSMxxxY-AAA Where "Y" can be M or M10; and "AAA" can be 60HPH or 72HBD
Boviet	Boviet modules with 33, 35 and 40 mm frames BVMZZaaYY-xxx-Bcc Where "ZZ" can be 66, 76 or 86 "aa" can be 10, 11 or 12; "YY" can be M, M(S) or P; and "B" can be blank or L; and "cc" can be blank, H, H-HC, H-HC-BF, H-HC-BF-DG, R-H-HC-BF or R-H-HC-BF-DG
BYD	BYD Solar modules with 30mm frames BYDxxxZLBK Where "Z" can be M or N
Canadian Solar	Canadian Solar modules with 30, 35 and 40 mm frames CSbY-xxxZ Where "b" can be 1, 3, 6, 6.1, 6.2 or 7; "Y" can be H, K, L, N, R, U, W, Y, -48TD, -48TM, -54TM, -66HB, -66TB, -66TM or -72TB; and "Z" can be blank, H, HP, HR, P, PB-AG, M, MS, MS-HL, MB-AG, T or TB-AG
Caterpillar	Caterpillar Modules with 35 mm frames PVCxxxA Where "A" can be M, MP or MP03-H

MODULE COMPATIBILITY

CertainTeed	CertainTeed modules with 30, 35 and 40 mm frames CTBBxxxYZZ-AA Where "BB" can be blank or M10 or TC; "Y" can be HC; "ZZ" can be 11 or 12; and "AA" can be 06, 08 or 09
Crossroads Solar	Crossroads Solar modules with 40 mm frames Crossroads Solar xxx
CSUN	CSUN modules with 40 mm frames CSUNxxx-zzA Where "zz" is 72; and "A" is M, MH, MM5BB, P or PH
CW Enerji	CW Enerji Modules with 35 mm frames CWTxxx-132TNB12R
Dehui	Dehui modules with 30, 35 and 40mm frames DH-MYYYZ-xxx Where "YYY" can be 760, 772, 860, 872; and "Z" can be B, F or W
Emmvee	Emmvee modules with 35 mm frames Exxx-YYZZZ-A Where "YY" can be HCM, HCMW, HCBG, HCBT; "ZZZ" can be 108, 120, 132 or 144; and "A" can be T or BT
Energy America	Energy America modules with 30 and 40 mm frames EA-ZLKY-ZZZxxx/M Where “Y” can be 7 or 8; and “ZZZ” can be SHDB108 or THLDD132
ET Solar (EliTe Solar) (ELITE Solar)	ET Solar modules with 30, 33, 35 and 40 mm frames ET-YZZZxxxAA Where "Y" can be M, N or NR; "ZZZ" can be 48TBH, 66TBH, 672, 672BH, 754BH, 760BH, 766BH, 772BH, 760TBH, 766TBH, 772TBH, 778TBH, 848TBH or 866TBH; and "AA" can be GB, GL, TB, TW, WB, WW
Fellow Energy	Fellow Energy modules with 30 and 35 mm frames FEyy-18ZZ-xxx Where "yy" can be 54, 66, 72 or 78; and "ZZ" can be X, X(N), X(ND) or X+(ND)
Freevolt	Freevolt modules with 35 mm frames ECP-PVGRAF-144HC-xxx
GCL	GCL modules with 35 and 40 mm frames GCL-ab/YY xxx Where "a" can be M or P; "b" can be 3 or 6; and "YY" can be 60, 72 or 72DH
Goldi	Goldi modules with 35 mm frames GS10-Byyy-zz-xxx Where "yyy" can be 108 or 144; and "zz" can be GF or TF
Goldi America	Goldi America modules with 30 mm frames GADYYT-xxxZZ Where "YY" can be 54 or 72; and "ZZ" can be BT or WT
Grape Solar	Grape modules with 35mm frames GS-M120-xxx-FAB1
GreenWatts Solar	GreenWatts modules with 30 and 35mm frames HSYY-xxx-ZZ Where "YY" can be 54, 60, 66, 72 or 78; and "ZZ" can be MN or BOB
Hanersun	Hanersun modules with 30 mm frames HN18N-ZZHTxxxW Where "ZZ" can be 54 or 72
Hansol	Hansol modules with 30 mm frames HAxxxYY-zzz Where "YY" can be AA, AB, AD, AE, XA, XD or ZB; and "zzz" can be CGEA0, CGFA0, DGEA0, GNEA0, NGEA0 or NNEA0
Heliene	Heliene modules with 35 and 40 mm frames YYZZ-xxxA Where "YY" can be 72, 96, 108, 120, 132, 144 or 156; "ZZ" can be HC, M, MBLK G1, P or MSLV G1; and "A" can be blank, G1, G1 Bifacial, M10 Bifacial, M10-SL, M10-SL-BLK, M10 TPC SL, M10 SL-Bifacial, M10 TPC SL Bifacial, Bifacial, M10 NTYP SL or M10 NTYP SL Bifacial

MODULE COMPATIBILITY

Hounen Solar	Hounen Solar modules with 30 and 35 mm frames HNM7-YYY-xxx/Z Where "YYY" can be SHDB144 or UHLDD144; and "Z" can be M or N
HT-SAAE	HT-SAAE modules with 30, 35 and 40 mm frames HTyy-aaaZ-xxx Where"yy" can be 66 or 72; "aaa" can be 18, 156, 166 or 210; "Z" can be M, M-C, M(V), M(V)-C, (ND)-F, X, X(ND)-F or X+(ND)-F
Hyperion Solar (Runergy)	Hyperion or Runergy modules with 30 and 35 mm frames HY-DHzzzAC-xxxB Where "zzz" can be 96, 108, 132 or 144; "A" can be N or P; "C" can be 8, 11 or 11B; and "B" can be blank or B
Hyundai	Hyundai modules with 30, 32, 35, 40 and 50 mm frames HiY-SxxxZZ Where "Y" can be A, N or S; "S" can M, S or T; and "ZZ" can be HG, HI, KI, NI, NJ, NF(BK), OJ, PI, RI, TI, YH(BK) or XG(BK)
Indepwr Solar	Indepwr Solar modules with 35 mm frames iPWR-M10-xxyyy-xxxW Where "xx" can be 54, 60 or 72; and "yyy" can be BX2D or BX2S
Iluminate USA	Illuminate USA Modules with 30 and 35 mm frames IL5-72HBD-xxxM
Imperial Star	Imperial Star Modules with 35 mm frames ISY7-zzzAAA-xxx/M Where “Y” can be M or N; “zzz” can be SHSB or UHSB; and “AAA” can be 108, 144 or 156
Indepwr Solar	Indepwr Solar modules with 35 mm frames iPWR-M10-xxyyy-xxxW Where "xx" can be 54, 60 or 72; and "yyy" can be BX2D or BX2S
JA Solar	JA Solar modules with 30, 35 and 40 mm frames JAy-bbww-xxx/aa Where “y” can be M or P; “bb” can be 54, 60, 66, 72 or 78; “ww” can be D10, D30, D40, D41, D42, D45, S01, S09, S10, S17, S30 or S31; and “aa” can be LB, MB, MB-US, MR, SC or PR
Jinko	Jinko modules with 30, 35 and 40 mm frames JKMxxxZZ-aa Where "ZZ" can be M, N, P or PP; and "aa" can be 54HL4-B, 60L, 66HL4M-BDV, 72, 72H, 72-V, 72L-V, 72HL-V, 72H-V, 72HL-TV, 7RL3-V, 7RL3-TV, 72HBL-V, 72HL4-V, 72HL4-TV, 72HL4-V-TV, 72HL4-BDV or 72HL4-BDX
Jolywood Solar	Jolywood Solar modules with 30mm frames JW-HDYYN-ZZ-xxx Where “YY” can be 96, 108, 132 or 144; and “ZZ” can be blank, R0 or R2
KB Solar	KB Solar modules with 35 mm frames KBS-xxx-Mono-YY Where "YY" can be blank or BF
LA Solar	LA Solar modules with 35 mm frames LSxxxYY Where "YY" can be BF, BL, BLA, HC or ST
LG	LG modules with 40, and 46 mm frames LGxxxYaZ-bb Where "Y" can be N, Q or S; "a" can be 1, 2 or 3; "Z" can be C, K, T, or W; and "bb" can be A5, A6, E6, E6.AW5, L5, V5, V6
Longi	Longi modules with 30, 35 and 40 mm frames LRa-YYzz-xxxM Where "a" can be 4, 5, 6, 7 or 8; "YY" can be 54, 66 or 72; and "zz" can be blank, DG, HV, PE, PH, HBD, HGD, HGBB, HPB, HPH, HIBD, HABB or HABD
Maxeon	Maxeon modules with 35, 40 and 46 mm frames SPR-AAAY-xxx-zzz Where "AAA" can be MAX, P or X; "Y" can be 3, 5, 6, 7, 21 or 22; and "zzz" can be blank, R, BLK, BLK-R, COM or UPP

MODULE COMPATIBILITY

Meyer Burger	Meyer Burger Modules with 35 mm frames Meyer Burger Black or White
Mission Solar (mSolar)	Mission Solar modules with 30, 35 and 40 mm frames YYY-bbxxxZZaa Where "YYY" can be MSI, MSE, MSH, MSN, MSX, TXI or TXS; "bb" can be blank, 6 or 10; "ZZ" can be blank, HN, HT, SQ, SX, 108, 120 or 144; and "aa" can be blank, 0B, BB, BW, 4G, 4T, 5R, 6W, 6Z, 9R, 9S or 9Z
Mitrex	Mitrex modules with 30 mm frames Mxxx-X3H Where "X" can be I or L
Navitas	Navitas modules with 30 mm frames NSG-BFT144-M10-xxx
NE Solar	NE Solar modules with 30, 35 and 40 mm frames NESExxx-zzAAX-yy Where "zz" can be 54, 60, 66 or 72; "AA" can be MH or TH; "X" can be blank or B or T; and "yy" can be G12, M6 or M10
Neo Solar Power	Neo Solar Power modules with 35 mm frames D6MxxxE4A
Optivolt	Optivolt modules with 35 mm frames OPT10M-xxxW Where "W" can be W or B
Panasonic (HIT)	Panasonic modules with 40 mm frames VBHNxxxYYzzA Where "YY" can be either KA, RA or SA; "zz" can be either 03, 17 or 18; and "A" can be blank, E or N
Panasonic (EverVolt)	Panasonic modules with 30 mm frames EVPVxxxA Where "A" can be blank or H, K, HK, HK2 or PK
Philadelphia Solar	Philadelphia modules with 30, 35 and 40 mm frames PS-YzzAA-xxxW Where "Y" can be M, MNB, MNG or P; "zz" can be 60, 72, 108, 132, 144 or 156; "AA" can be blank, (BF), (HC), (HCBF) or (HCBF)-GG; and "W" can be blank or W
Phono Solar	Phono Solar modules with 30, 33, 35 and 40 mm frames PSxxxY-ZZ/A Where "Y" can be M, M1, MH, M1H, M4, M4H, M6, M6H, M8H, M8GF, M8GFH or M13GFH; "ZZ" can be 18, 20, 22, 24 or 26; and "A" can be blank, RNH, T, TH, TNH, UHB, VHB, VNHB or WNH
Prism Solar	Prism Solar modules with 35 mm frames PST-xxxW-M72Y Where "Y" can be H, HB or HBI
Q CELLS	Q CELLS Modules with 30, 32, 35 and 40 mm frames aaYY-ZZ-xxx where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, PLUS DUO, PEAK DUO or Tron; and "ZZ" can be BFR G4, BFR G4.1, BFR G4.3, BFR G4.1, BFR G4.1/TAA, EC-G4.4, G4, G4.1, BLK G4.1, G4.2, G4.1/MAX, G4.1/TAA, BLK G4.1/TAA, G5, BLK G5, BLK-G6+/HL, L-G4, L-G4.1, L-G4.2, L-G5.2, L-G5.3, L-G6.2, L-G6.3, L-G6.3/BFG, L G4.2, L-G4.2/TAA, L-G7, L-G7.2, L-G7.3, L-G8.2, L-G8.3, L-G8.3/BFG, L-G8.3/BGT, BLK-G10, BLK-G10+, BLK-G10+/AC, M-G2+, BLK M-G2+, BLK M-G2. C+, BLK M-G2.D+, BLK M-G2.F+, BLK M-G2.H+, BLK M-G2+/AC, BLK M-G2.C1+/AC, BLK M-G2.D1+/AC, BLK M-G2.F1+/AC, BLK M-G2.H1+/AC, BLK ML-G10+, BLK ML-G10.B+, BLK ML-G10.C+, BLK ML-G10. C1+/AC, BLK ML-G10.D+, BLK ML-G10.D1+/AC, BLK ML-G10 +/t, BLK-G10+/HL, BLK ML-G10+/TS, ML-G12S.3/BFG, ML-G12S.7/BFG, XL-G2.3/BFG, XL-G10.c, XL-G10.d, XL-G10.d/BFG, XL-G10.2, XL-G10.3, XL-G10.3 / BFG, XL-G11.2, XL-G11.3, XL-G11.3/BFG, XL-G11S.3/BFG or XL-G11S.L3/BFG
Rayzon Solar	Rayzon Solar modules with 35 mm frames RSYxxxAAZZ Where "Y" can be blank or G; "AA" can be blank or 132 and "ZZ" can be TGC or WC
REC Solar	REC modules with 30 and 38 mm frames RECxxxYYZZ Where “YY” can be AA, NP, NP2, NP3, TP2, TP2S, TP2M or TP2SM ; and “ZZ” can be blank, Black, BLK, BLK2, 72, Pro M, Pro L, Pure, Pure 2, Pure-R, Pure-RX or Pure-RX-DC

MODULE COMPATIBILITY

Renesola	Renesola modules with 30 mm frames RS6-xxxNBG-E3
Renogy	Renogy Modules with 35 mm frames RAAxxxD-YY-ZZZ Where "AA" can be NG or SP; "YY" can be blank, 144, BB or BK; and "ZZZ" can be blank, 108 or 120
Risen	Risen Modules with 30, 35 and 40 mm frames RSMyy-a-xxxZ Where "yy" can be 72, 110, 120 or 144; "a" can be 6 or 8; and "Z" can be M, P or BMDG
Rivulet Solar	Rivulet Solar modules with 35 mm frames RE72-18X(ND)-xxx
S-Energy	S-Energy modules with 35 mm frames SABB-CCYYY-xxxZ Where "A" can be L; "BB" can be 40; "CC" can be 72; "YYY" can be MAI, MBI or MCI; and "Z" can be V
SEG Solar	SEG Solar modules with 30, 33, 35 and 40 mm frames SBB-aYY-xxx-ZZ Where “BB” can be RP or EG; “a” can be blank, 6 or B; “YY” can be blank, MA or PA; and “ZZ” can be blank, 6MA, 6PA, 6MA-HV, BB, BG, BW, WB, WW, BMB, BMA-HV, BMA-BG, BMA-TB, BMB-TB, BMB-BG, BMD-BG, BMB-HV, BMD-HV, BMD-TB, BTA-BG, BTB-BG, BTD-BG, BTC-BG, BTZ-BG or BMZ-BG
Seraphim	Seraphim modules with 30, 33 and 35 mm frames SRP-xxx-YYY-ZZ Where “YYY” can be BMA, BMB, BMC, BMD, BTA, BTC, BTD, BTE; and “ZZ” can be BG or HV
Sharp	Sharp modules with 40 mm frames NU-SAxxx
Shinsung E&G	Shinsung E&G Modules with 35 mm frames SSVxxx-144MH
Silfab	Silfab Modules with 35 and 38 mm frames SIL-xxxAA Where "AA" can be BG, BK, BL, HC, HC+, HM, HN, HL, NL, QD, QM, XL, XM or XM+
Sinotec	Sinotec Modules with 30 mm frames STS-xxxP-54DD
Sirius PV	Sirius PV Modules with 35 mm frames ELNSMzzM-HC-yy-xxx Where "zz" can be 48 or 54; "yy" can be BF, N or N-SNRN
Solar4America	Solar4America modules with 30, 35 and 40 mm frames S4Axxx-ZZyy Where "ZZ" can be 60, 72, 108 or 144; “yy” can be MH5, MH5BB, MH5BW, MH10STT, TH10BB, TH10STT or TH16STT
Solarever	Solarever modules with 30, 35 mm frames SE-zzz*yy-xxxM-aaa Where "zzz" can be 166 or 182; "yy" can be 83, 91 or 105; and "aaa" can be 96-BD, 108 or 144
Solaria	Solaria modules with 35 mm frames PowerA-xxxY-ZZ Where "A" can X or XT; "Y" can be R; and "ZZ" can be blank or PL
SolarSpace	SolarSpace modules with 30 and 35mm frames SSB-yyzzz-xxxA Where "B" can be 8 or A; "yy" can be 48, 54, 66 or 72; "zzz" can be HD, HDB or HSB; and "A" can be M or N
SolarTech Universal	SolarTech modules with 40 mm frames EPIQ
Sonali	Sonali Modules with 35 and 40 mm frames SS-M-xxx-yyy Where "M" can be blank or M; and "yyy" can be blank or W-M60H M10
Solarworld	Solarworld Modules with 33 mm frames SWxxx
Star Solar	Star Solar modules with 35 mm frames Star-xxxW-YYY-ZZZ Where "YYY" can be M60H or M60HB; and "ZZZ" can be blank or M10

Sunmac Solar	Sunmac modules with 30 and 35 mm frames SMxxxMaaaZZ-YY Where "aaa" can be 660, 754 or 772; "ZZ" can be NH or SH; and "YY" can be BB or TB
SunPower	Sunpower 35, 40 and 46 mm frames SPR-Zb-xxx-YY Where "Z" can be A, E, P, M or X; “b” can be blank, 5, 17, 18, 19, 20, 21, 22 or 23 and “YY” can be COM, COM-MLSD, MLSD, MLSD-COM, G-AC, BLK-G-AC, H-AC, BLK-H-AC, or UPP
Sunpro	Sunpro Modules with 30, 33 and 35 mm frames SPDGxxx-NyyyMzz Where “yyy” can be 108, 132 or 144; and “zz” can be 10 or 12
Sunspark	Sunspark modules with 35 mm frames SG7G72M(H)-xxx
Suntech	Suntech Modules with 35 and 40 mm frames STPxxxy-zz/aa Where "y" is blank or S; and "zz" can be 24, B60 or B72; and "aa" can be Vfw, Vnh or Wnhb
Talesun	Talesun modules with 30, 35 and 40 mm frames TAByZZaa-xxx Where "A" can be D, M or P; and "B" can be 3, 6, 7 or 9; "y" can be blank, F, G, H, I or L; "ZZ" can be 48, 54, 60, 66, 72 or 78; and "aa" can be M, M(H) or P
Tata Power Renewable Energy	TP Solar Ltd modules with 30mm frames TPxxxZZZ Where "ZZZ" can be HG10B or VG12R16NB
Tesla	Tesla modules with 40 mm frames TZZxxxY Where "ZZ" can be blank or SP; and "Y" can be blank, H or S
Thornova	Thornova Modules with 30 and 35 mm frames TS-YYZZ(xxx)-X Where "YY" can be BB, BBT, BG, BGT, BW or BWT; "ZZ" can be 48, 54, 60, 66 or 72; and "X" can be blank, G11, G12R or X
Topco Solar	Topco Solar modules with 30mm frames TPM7-SH108-xxx/M
Trina Solar	Trina Modules with 30, 35, 40 and 46 mm frames TSM-xxxYYZZ Where "YY" can be DD, DE, DEG, NED, NEG, NE09RC, NE09RH.05, NE19RC, NEG9RH, NEG21C.20, NFG, PA, PD or PE; and "ZZ" can be .05, 05A, 05.08, 09.05, 09C.05, 09C.07, 06XC.05(II), 06XC.07(II), 14, 14A(II), 14H(II), 14H.08(II), 15H, 15H(II), 15M(II), 15HC.20(II), 15MC.20(II), 15V, 15V(II), 15VC.20(II), 18M(II), 18M.08(II), 18MC.20(II), 19, 19C.20, 19RC.20, 21C.20 or .25
Universal	Universal Solar Modules with 35 mm frames UNI-xxx-yyyZZZ-aa Where "yyy" can be 108, 120 or 144; "ZZZ" can be M, MH, BMH; and "aa" can be blank, BB or DG
Upsolar	Upsolar Modules with 40 mm frames UP-MxxxM
URE	URE modules with 30 and 35 mm frames DyZxxxaa Where “D” can be D or F; “y” can be A, B, 6 or 7; “Z” can be F, K, L or M; and “aa” can be B7G, B8G, BFG, BFG-BB, C8G, DFG-BB, H3A, H4A, H8A, L4A, E7G-BB, E8G, E8G-BB, MFG, MFG-BB, MF1-BB or M7G-BB
Vikram	Vikram solar modules with 35 and 40 mm frames XVSyy.ZZ.AAA.bb Where "X" can be Hypersol, Paradea, Prexos or Somera; "yy" can be M, MH, MHBB, MS, MDH, MDT or MDHT; "ZZ" can be 54, 60, 66, 72 or 78; "AAA" is the module power rating; and "bb" can be 03, 04 or 05

MODULE COMPATIBILITY

VSUN	VSUN modules with 30 and 35 mm frames VSUNxxxA-YYYZZ Where “A” can be blank or N; “YYY” can be 96, 108, 120, 132, 144 or 156; and “ZZ” can be BMH, BMH-BB, BMH-DG, BMH-DG-BB, BMHR-DG, BMHR-DG-BB, BMHS-DG, BMHS-DG-BB, BMHS-DG-BT, M, M-BB, M-BW or MH
Waaree	Waaree modules with 30 and 35 mm frames AA-ZZ-xxx Where "AA" can be Bi, BiN, WSMDI or WSMDIB; "ZZ" can be blank, 08, 21, 55 or 66
Yingli	Yingli modules with 40 mm frames YGE-XXX-T
Yotta	Yotta modules with 30 and 35 mm frames YSM-Bxxx-ZZ-72-1 Where "ZZ" can be 06 or 10
Zeus	Zeus Solar Modules with 40 mm frames ZxxxM-HB
ZN Shine	ZN Shine modules with 30, 35 and 40 mm frames ZXMY-AAA-xxx/B Where "M" can be M or P; "Y" can be 6, 7, 8 or R; "AAA" can be 72, GPLDD132, NH120, NH144, NHDB144, NHLDD144, SH108, SH144, SHDB120, SHDB144, SHLDD120, SHLDD144, TP120, TP132, TPLDD120, TPLDD132, UH108, UHLDD108, UHLDD144, UHLDD156 or UPLDD132; and "B" can be M, N or P

Module compatability provided by others.

FRAMELESS MODULE LIST

MAKE	MODELS
Astronergy Solar	Astronergy frameless modules CHSM6610P(DG)-xxx
Canadian Solar	Canadian Solar frameless modules CSbY-xxx-Z Where “b” can be 3 or 6; “Y” is K, P, U, or X; and “Z” can be M-FG, MS-FG, P-FG, MB-FG, or PB-FG
Heliene	Heliene frameless modules YYZZxxxA Where "YY" can be72; "ZZ" can be M; and "A" can be GH
Jinko	Jinko frameless modules JKMxxxPP-DV
Prism Solar	Prism Solar frameless modules BZYY-xxxAAA Where "Z" can be i or N; "YY" can be 48, 60, 60S, 72 or 72S; and "AAA" can be blank or BSTC
Risen	Risen frameless modules RSMyy-6-xxxZZ Where “yy” can be 60, 72, 120 or 144; and “ZZ” can be MDG or PDG
Stion	Stion frameless modules STL-xxx or STL-xxxA
Sunpreme	Sunpreme frameless modules GXB-xxxYY Where “YY” can be blank or SL
Trina	Trina frameless modules TSM-xxxYY Where “YY” can be either DEG5(II), DEG5.07(II), DEG5.40(II), DEG5.47(II), DEG14(II), DEG14C(II), DE-G14C.07(II), DEG14.40(II), PEG5, PEG5.07, PEG5.40, PEG5.47, PEG14, or PEG14.40