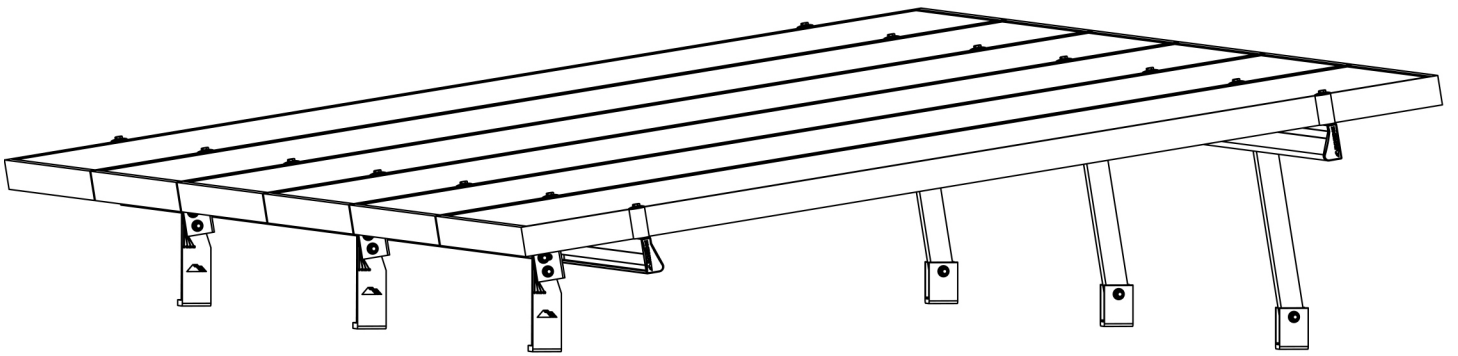


TILT MOUNT



CONTENTS

DISCLAIMER	1
RATINGS	2
MARKINGS	2
CHECKLIST	3
1. ATTACH BASES	4
2. ADD TILT LEGS	4
3. PLACE RAILS	5
4. SECURE LUGS	5
5. SECURE MODULES	6
CAMO	7
EXPANSION JOINTS	8
ELECTRICAL DIAGRAM	8
ELECTRICAL DIAGRAM (CONTINUED)	9
END CAPS	9
WIRE CLIPS	9
MICROINVERTER KITS	10
SYSTEMS USING ENPHASE MICROINVERTERS OR SUNPOWER AC MODULES	10
SYSTEMS USING PHAZR MICROSTORAGE PRODUCTS	10
FRAMELESS MODULE KITS	11
MODULE COMPATIBILITY	11
MODULE COMPATIBILITY	12
MODULE COMPATIBILITY	13

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. Failure to follow these guidelines may result in property damage, bodily injury or even death.

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.
- 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. If corrosion is found, replace affected components 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



#5003339

Intertek

- Conforms to STD UL 2703 (2015) Standard for Safety First Edition: Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.
- Conforms to Canadian requirement LTR AE-001-2012 Photovoltaic Module Racking Systems.
- Max Overcurrent Protective Device (OCPD) Rating: 25A
- Max Module Size: 24ft²
- Max Frameless Module Size for Canadian LTR-AE: 19.5 ft²
- Module Orientation: Portrait or Landscape
- CAMO Specific Allowable Design Load Rating: 50 PSF downward, 50 PSF upward, 15 PSF lateral
- LTR AE Canadian Load Rating: 2400 PA
- System Level Allowable Design Load Rating: meets minimum requirements of the standard (10 PSF downward, 5 PSF upward, 5 PSF lateral). Actual system structural capacity is defined by PE stamped [certification letters](#).

CLASS A SYSTEM FIRE RATING PER UL 1703

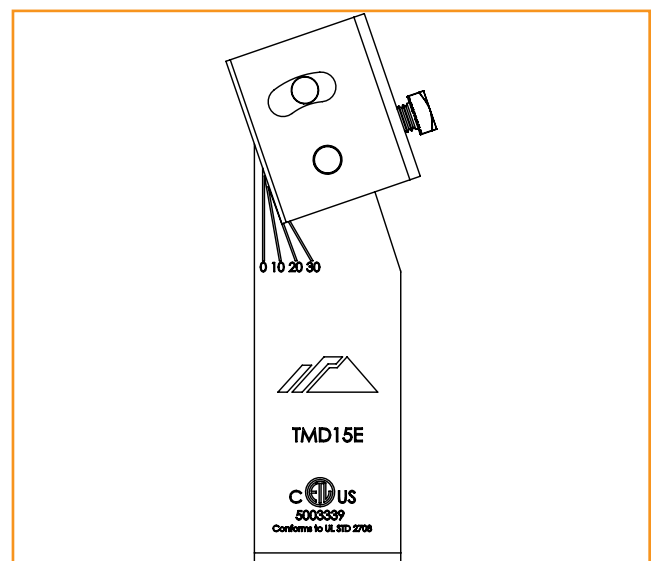
- Any System Tilt with Modules Types 1, 2 & 3 on Low Slope Roofs (< 9.5 degrees)
- Any System Tilt with Module Types 1 & 2 on Steep Slope Roofs (> 9.5 degrees)
- Any module-to-roof gap is permitted, with no perimeter guarding required. This rating is applicable with any third-party attachment.
- Class A rated PV systems can be installed on Class A, B, and C roofs without affecting the roof fire rating.

STRUCTURAL CERTIFICATION

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

MARKINGS

Product markings are located on the South Tilt Leg.



CHECKLIST

PRE-INSTALLATION

- Verify module compatibility. See [Page 11](#) for info.

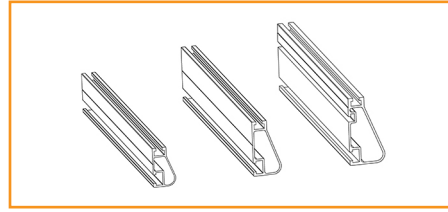
TOOLS REQUIRED

- Cordless Drill (non-impact)
- Impact Driver (for lag bolts)
- Torque Wrench (0-250 in-lbs)
- 5/16" Socket
- 7/16" Socket
- 9/16" Socket (deep)
- String Line

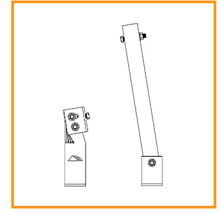
TORQUE VALUES

- Tilt Leg Nuts (9/16" Socket): 250 in-lbs
- Bonded Splice Screws (5/16" Socket): 20 in-lbs
- Grounding Lug Nuts (7/16" Socket): 80 in-lbs
- Grounding Lug Terminal Screws (7/16 Socket): 20 in-lbs
- Universal Fastening Objects (7/16" Socket): 80 in-lbs
- Expansion Joint Nuts (7/16") : 80 in-lbs
- Microinverter Kit Nuts (7/16" Socket): 80 in-lbs
- Frameless Module Kit Nuts (7/16" Socket): 80 in-lbs

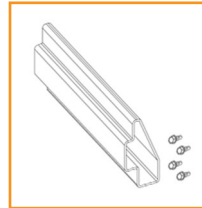
IRONRIDGE COMPONENTS



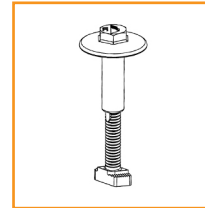
XR Rail



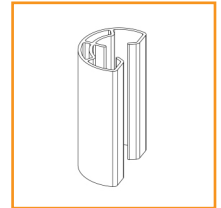
Tilt Leg Kit



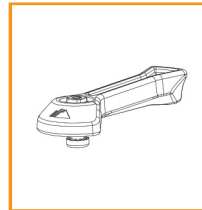
Bonded Splice



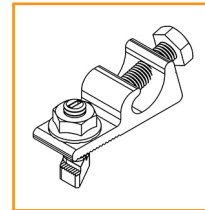
UFO



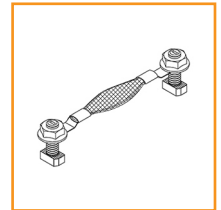
Stopper Sleeve



CAMO



Grounding Lug



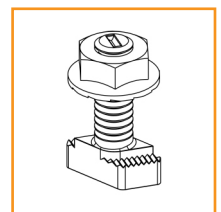
Expansion Joint



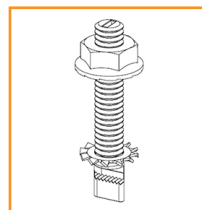
End Cap



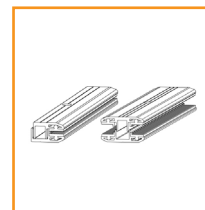
Wire Clip



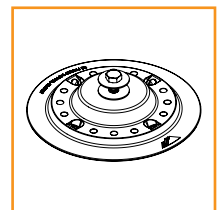
Microinverter Kit



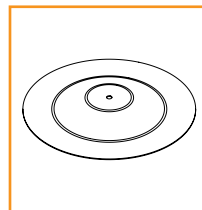
Frameless
Module Kit



Frameless
End/Mid Clamp



Flat Roof
Attachment



Membrane
Flashing

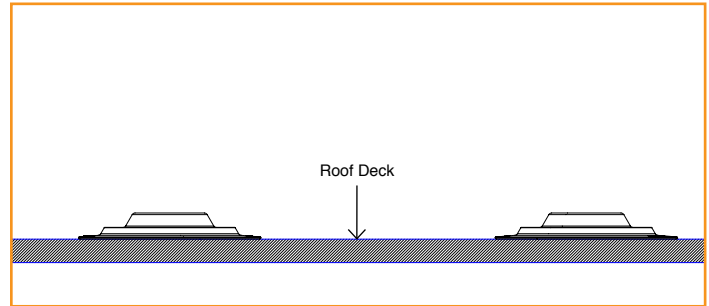
💡 If using previous version of: Integrated Grounding Mid Clamps, Grounding Lug, End Clamps, and Expansion Joints please refer to Alternate Components Addendum (Version 1.20).

1. ATTACH BASES

Mark locations for Flat Roof Attachment. Type, size, and quantity of roof screws to be specified by Structural Engineer. Fastener size not to exceed #15. Screws should be installed symmetrically to each other. If using a membrane flashing, remove the silicone washer's protective liner prior to attaching the membrane. Ensure membrane flashing is compatible with existing roofing material.

🔧 **Additional tested or evaluated third-party roof attachments:**

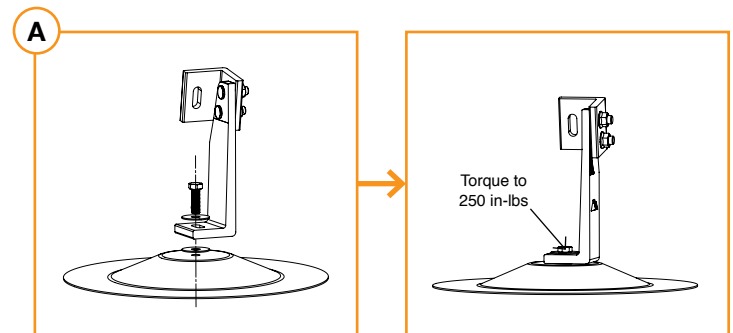
- [Anchor Products](#) - U-Anchor
- [S-5! Standing Seam Metal Roof Clamps](#) - Certification of metal roof clamps includes bonding to both painted and galvalume metal roofs. Tighten S-5! and S-5! Mini set screws to 130-150 in-lbs (≥ 24 gauge) or 160-180 in-lbs (22 gauge) roofs. Tighten S-5! M10 bolt to 240 in-lbs or S-5! Mini M8 bolt to 160 in-lbs. Use the following fastening guidelines for other S-5! roof clamps: ProteaBracket™ - firmly seat roof screws and tighten hinge bolt to 225 in-lbs; RibBracket™ - firmly seat roof screws and tighten M8 bolt (M8-1.25 x 22mm sold separately) to 160 in-lbs; and SolarFoot™ - firmly seat roof screws and tighten M8 flange nut to 160 in-lbs.
- [QuickMount PV Tilt Standoffs](#) - QMNC, QMLSH; Tighten 5/16" bolt on top of standoff to a minimum of 140 in-lbs.



2. ADD TILT LEGS

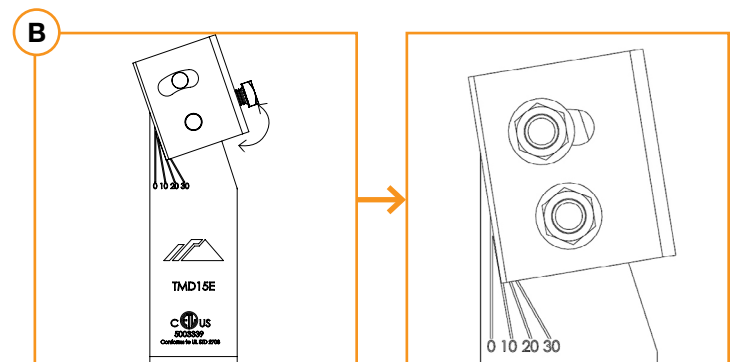
A. ASSEMBLE SOUTH LEGS

Mount South Tilt Leg Assembly to southern row of roof attachments. The IronRidge logo should face east to ensure proper South Leg orientation. Tighten Flat Roof Attachment hardware to **250 in-lbs**. If using a third-party roof attachment refer to manufacturer's instructions for proper tightening torque.



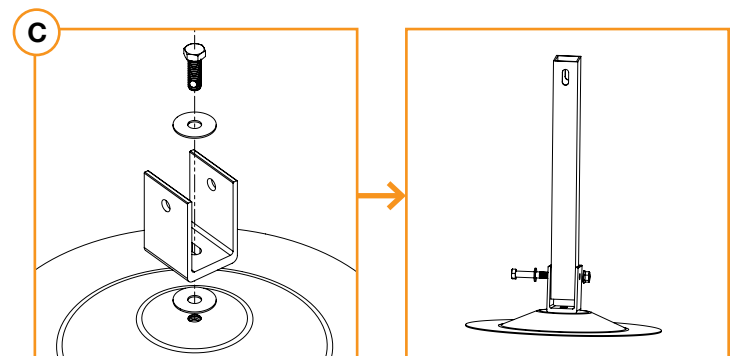
B. SET ANGLE

Set top pivot bracket of South Tilt Leg to the desired angle using the angle indicator on the face of the leg. Finger tighten bolts to allow for adjustment if necessary.



C. ASSEMBLE NORTH LEGS

Mount U-foot to northern row of roof attachments. Tighten Flat Roof Attachment hardware to **250 in-lbs**. If using a third-party roof attachment refer to manufacturer's instructions for proper tightening torque. Mount North Tilt Leg to northern row of U-feet and loosely secure hardware.

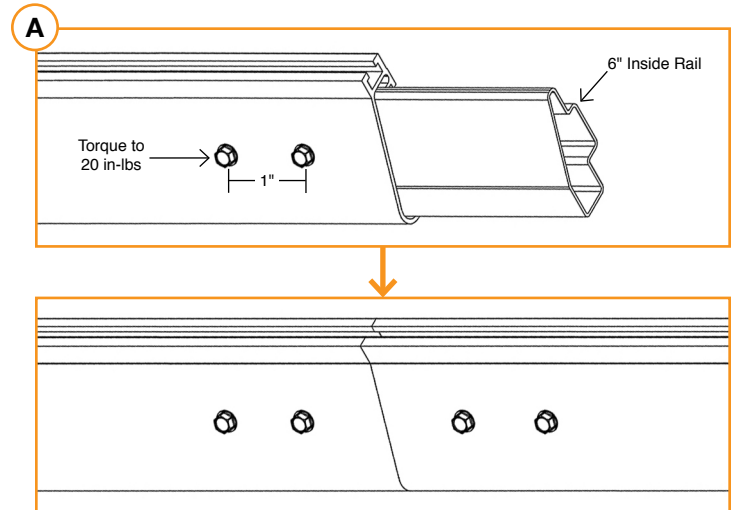


3. PLACE RAILS

A. CONNECT SPLICES

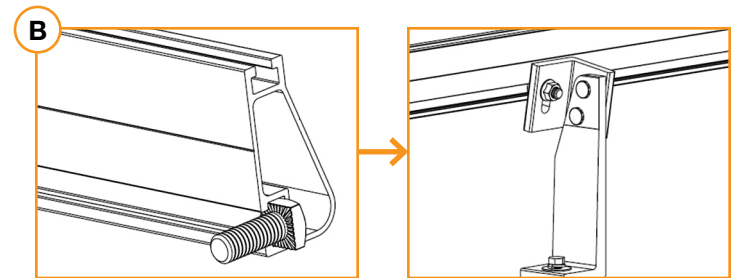
Use Bonded Splices, when needed, to join multiple sections of rail. Insert Bonded Splice 6" into first rail and secure with two self-drilling screws, spacing them about 1" apart and torquing to **20 in-lbs**. Slide second rail over Bonded Splice and secure with two self-drilling screws.

- 💡 Rows exceeding 100 feet of rail must use [Expansion Joints](#).
- 💡 For XR10 and XR100 rails, insert screws along the provided lines.
- 💡 Refer to Structural Certification letters for rail splice location requirements.
- 💡 Screws can be inserted on front or back of rails.



B. ATTACH SOUTH RAILS

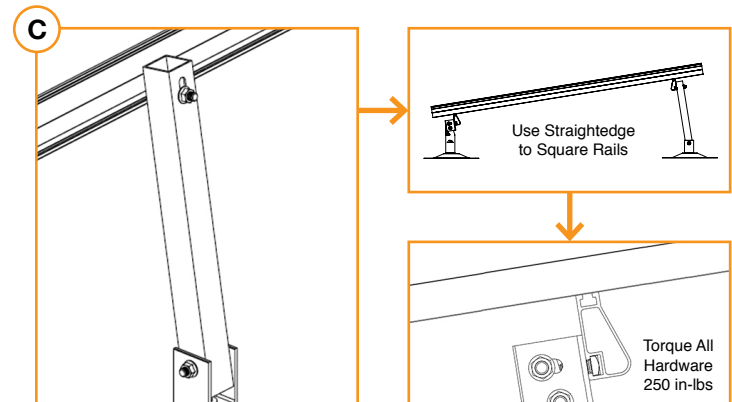
Slide 1" long bonding bolt into side-facing rail slot. Mount rail to pivot bracket of South Legs and loosely tighten nuts.



C. ATTACH NORTH RAILS

Slide 2.25" bonding bolt into side-facing rail slot. Mount rail to top of North Legs. Tighten all 3/8" hardware to **250 in-lbs** once rails are square.

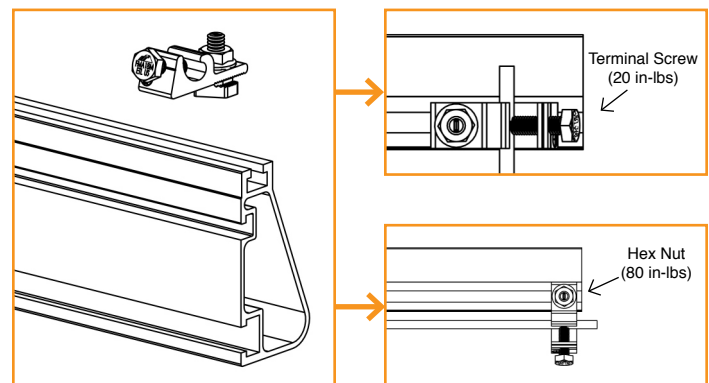
- 💡 Use a straight edge to ensure South and North rails are on the same plane. An extra section of rail works well.
- 💡 Rails can mount on either north or south side of North Tilt Leg.



4. SECURE LUGS

Insert T-bolt in top rail slot and torque hex nut to **80 in-lbs**. Install a minimum 10 AWG solid copper or stranded grounding wire. Torque terminal screw to **20 in-lbs**.

- 💡 Ground Lugs are only needed on one rail per continuous row of modules, regardless of row length. (unless frameless modules are being used, see [Page 10](#)).
- 💡 If using Enphase microinverters or Sunpower AC modules, Grounding Lugs may not be needed. See [Page 10](#) for more info.
- 💡 Grounding Lugs can be installed anywhere along the rail and in either orientation shown.
- 💡 Grounding Lugs are intended for use with one solid or stranded copper wire, conductor size 10-4AWG.

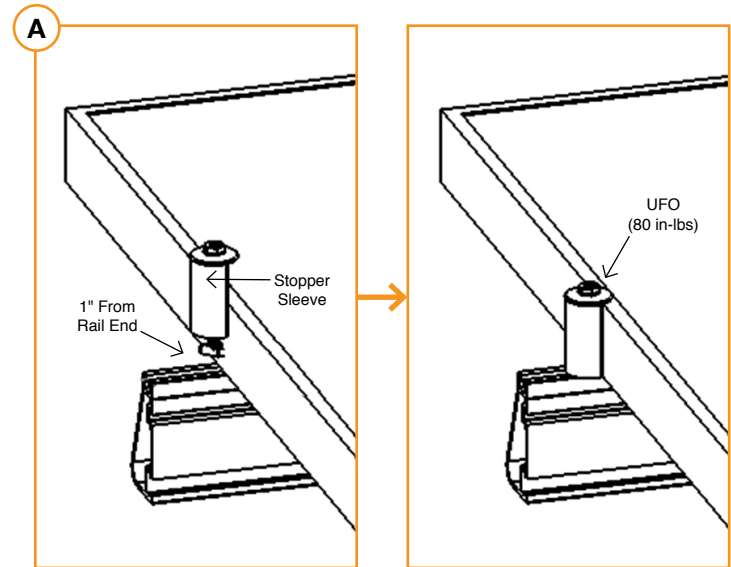


5. SECURE MODULES

A. SECURE FIRST END

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

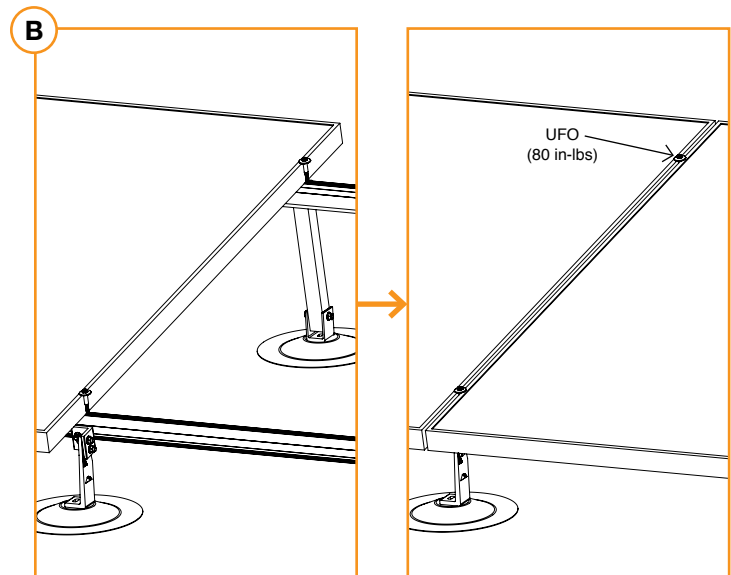
- 💡 Ensure rails are square before placing modules.
- 💡 Hold Stopper Sleeves on end while torquing to prevent rotation.
- 💡 If using CAMO instead of UFO + Stopper Sleeve, refer to [Page 7](#) for CAMO installation procedure.



B. SECURE NEXT MODULES

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

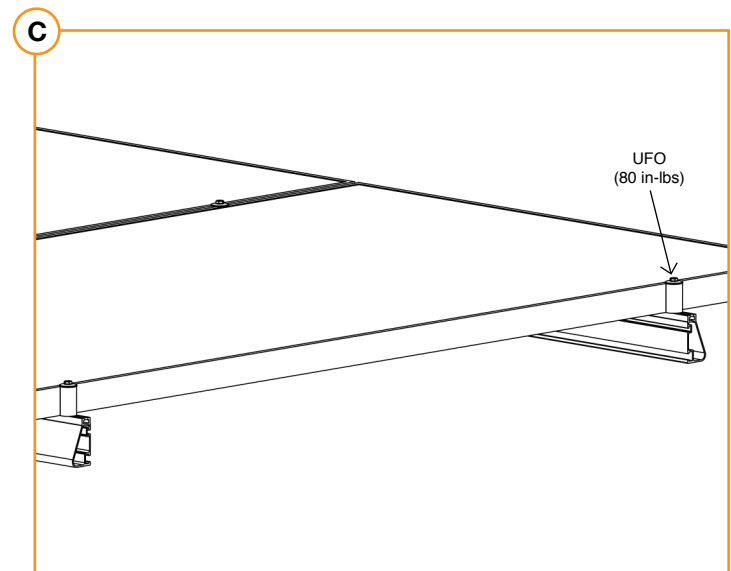
- 💡 When reinstalling UFO, move modules a minimum of 1/16" so UFOs are in contact with a new section of module frame.
- 💡 When UFOs are loosened and re-tightened, ensure UFO T-bolt bottoms out in rail channel before re-torquing UFO to achieve full engagement between T-bolt and rail.
- 💡 If using Wire 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 on rail, ensuring it is hooked over the top of the module. Torque to **80 in-lbs**.

- 💡 Hold Stopper Sleeves on end while torquing to prevent rotation.
- 💡 Repeat all steps for each following row of modules, leaving a minimum 3/8" gap between rows.
- 💡 If using CAMO instead of UFO + Stopper Sleeve, refer to [Page 7](#) for CAMO installation procedure.



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.



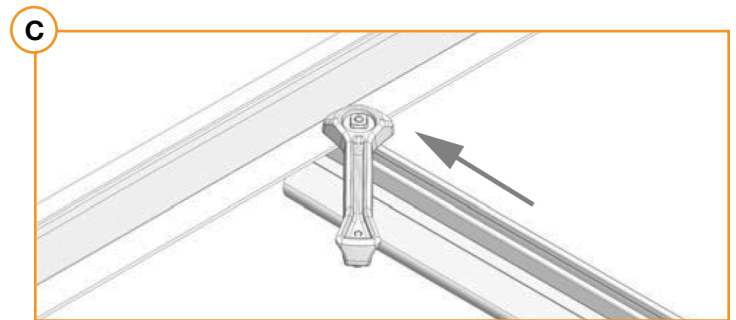
B. PLACE MODULE

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



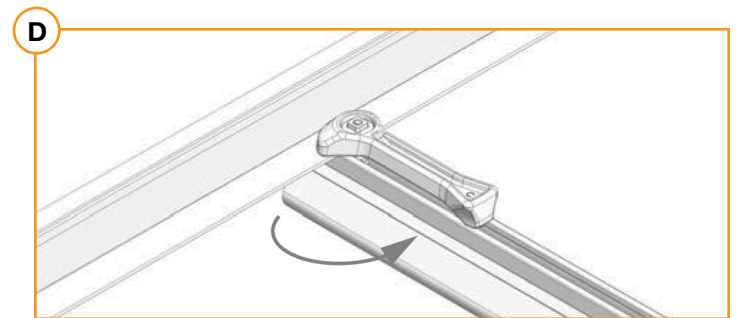
C. PULL TOWARDS END

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



D. SECURE TO FRAME

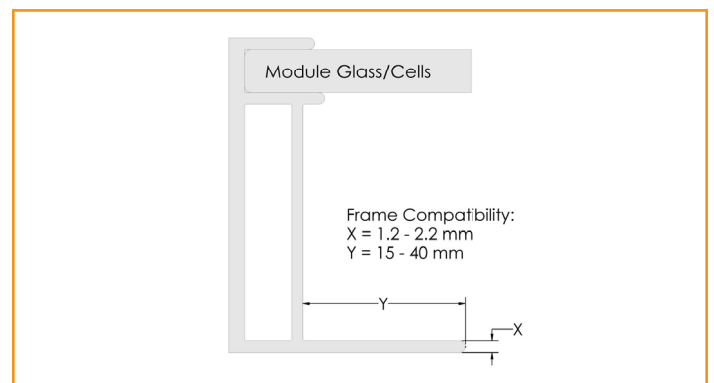
Rotate handle with an upwards motion until CAMO snaps into rail channel. Ensure CAMO bonding pins are fully seated on top of module frame.



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).



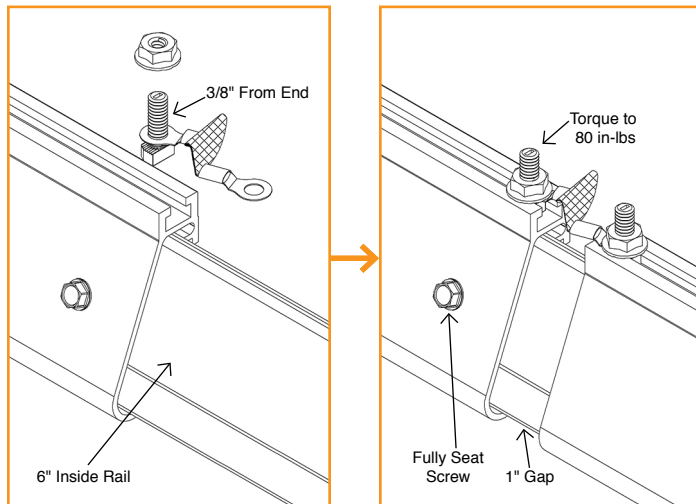
EXPANSION JOINTS

GROUNDING STRAP EXPANSION JOINT

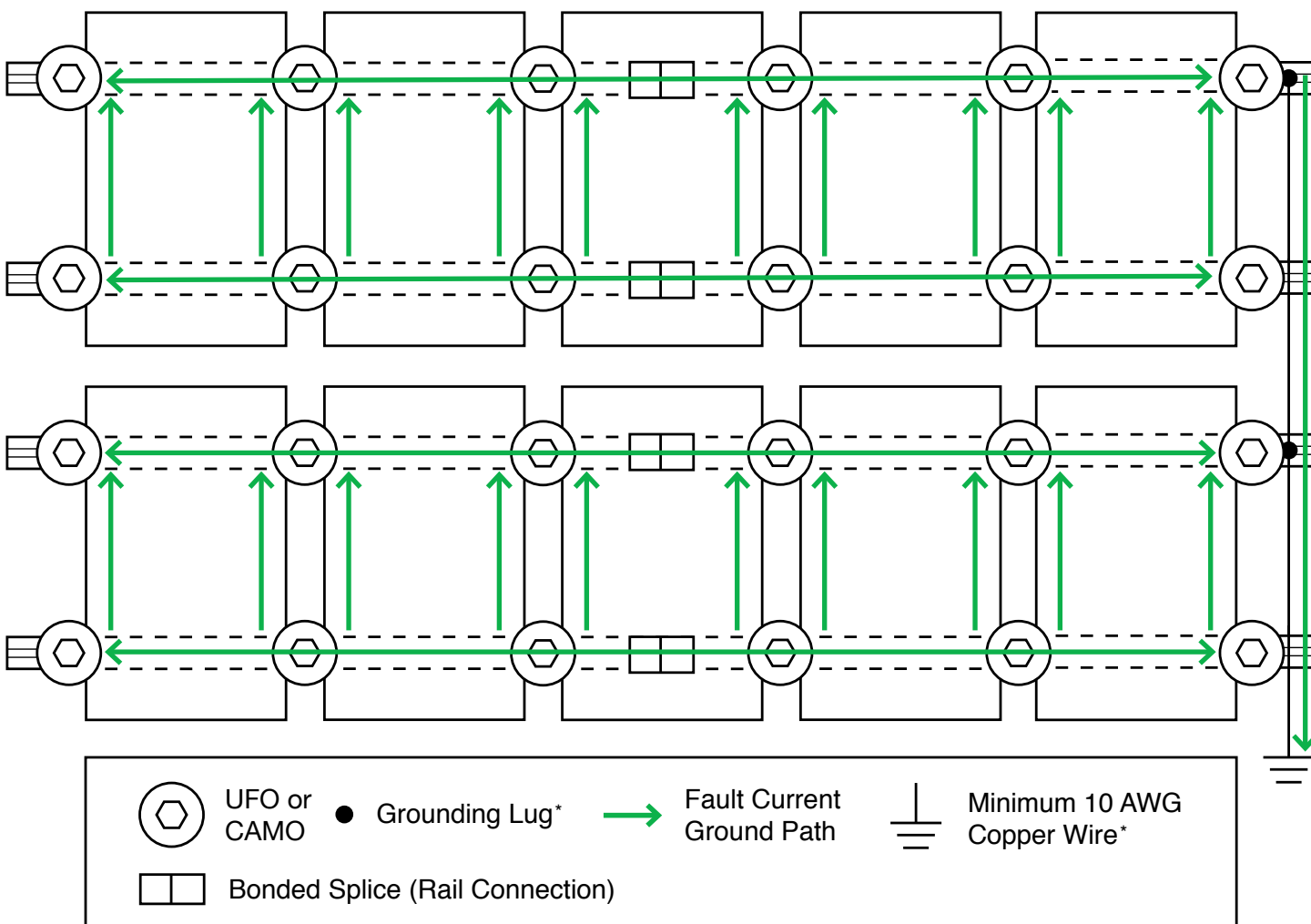
Grounding Strap Expansion Joints are required for thermal expansion of rows exceeding 100 feet of rail.

Insert Bonded Splice 6" into first rail and secure with two self-drilling screws, spacing them approximately 1" apart and tightening to **20 in-lbs.** Assemble and secure Grounding Strap 3/8" from rail end. Slide second rail over Bonded Splice leaving 1" gap between rails. Attach other end of Grounding Strap with hardware, and torque hex nuts to **80 in-lbs.**

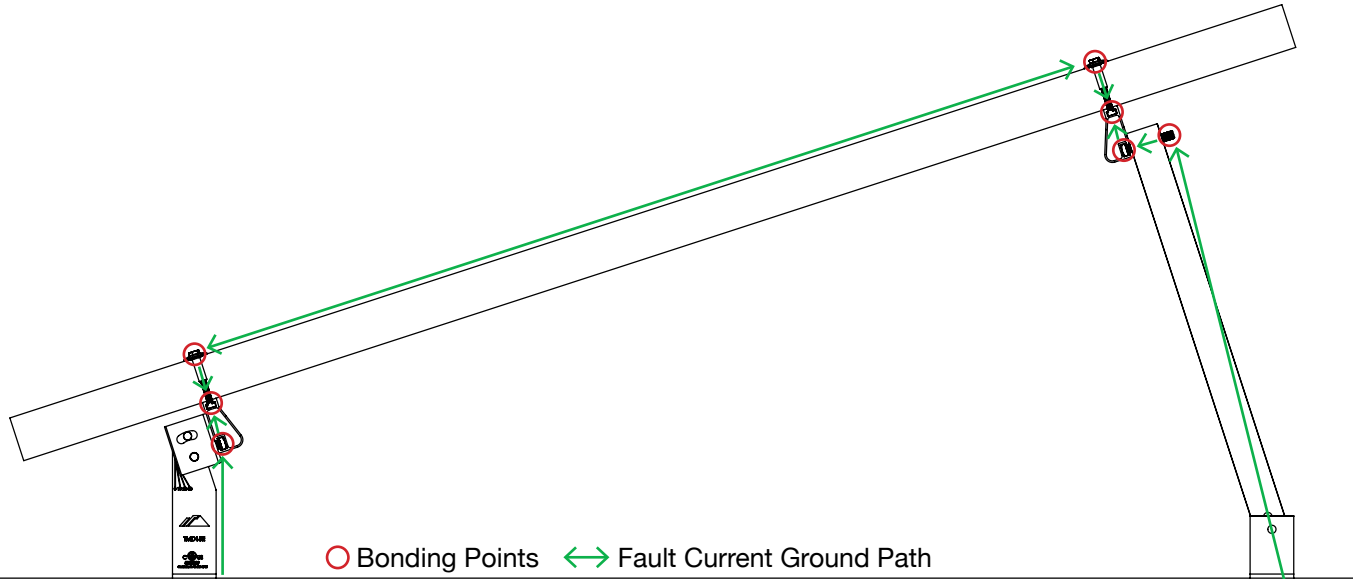
- 💡 Remaining Bonded Splice screws are not used with Expansion.
- 💡 Only one Grounding Strap is required per row of modules.



ELECTRICAL DIAGRAM



*Grounding Lugs and wire are not required in systems using certain Enphase microinverters or certain Sunpower modules. Equipment grounding is achieved with the Engage cable for Enphase or the AC module cable system for Sunpower via their integrated EGC.

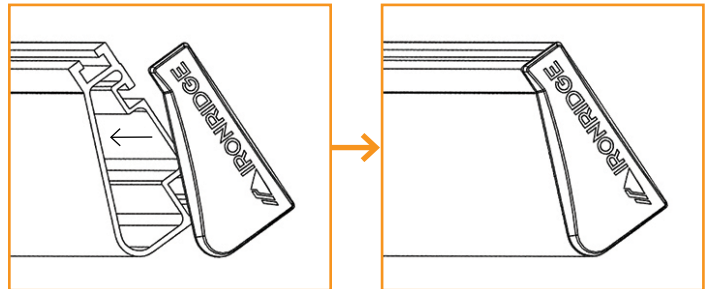


END CAPS

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

Firmly press End Cap onto rail end.

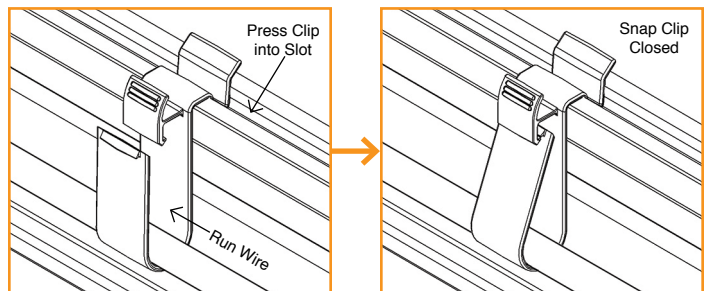
- 💡 End Caps come in sets of left and right. Check that the proper amount of each has been provided.
- 💡 For open-structure installations, you can use adhesive to secure the End Caps.



WIRE CLIPS

Wire Clips offer a simple wire management solution.

Firmly press Wire Clip into top rail slot. Run electrical wire through open clip. Snap closed once all wires have been placed.



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**.

💡 If installing in areas with ground snow loads greater than 40 psf and underneath a module, install MLPE devices as close as possible to module frame edge.

COMPATIBLE PRODUCTS

Enphase

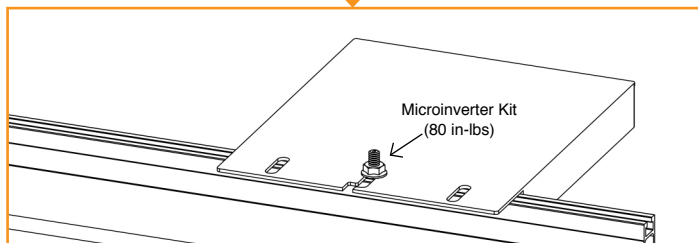
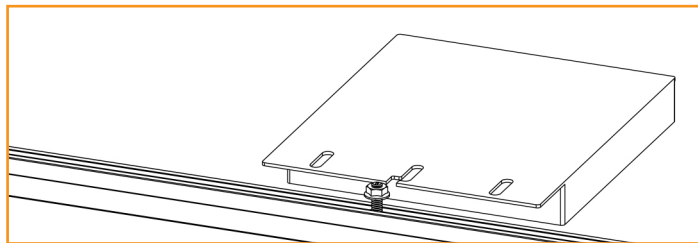
M250-72, 250-60, M215-60, C250-72, S230, S280, IQ 6, IQ 6+, IQ 7, IQ 7+, IQ 7X, Q Aggregator

Darfon

MIG240, MIG300, G320, G640

Solar Edge

P300, P320, P340, P370, P400, P405, P505, P600, P700, P730, P800p, P800s, P850, P860



SYSTEMS USING ENPHASE MICROINVERTERS OR SUNPOWER AC MODULES

IronRidge systems using approved Enphase products or SunPower modules eliminate the need for lay-in lugs and field installed equipment grounding conductors (EGC). This solution meets the requirements of UL 2703 for bonding and grounding and is included in this listing.

The following Sunpower modules are included in this listing: Modules with model identifier Ab-xxx-YY and InvisiMount (G5) 46mm frame; where "A" is either E, or X; "b" can be 17, 18, 19, 20, 21, or 22; and "YY" can be C-AC, D-AC, BLK-C-AC, or BLK-D-AC.

The following Enphase products are included in this listing: Microinverters M250-72, M250-60, M215-60, C250-72, and Engage cables ETXX-240, ETXX-208, ETXX-277.

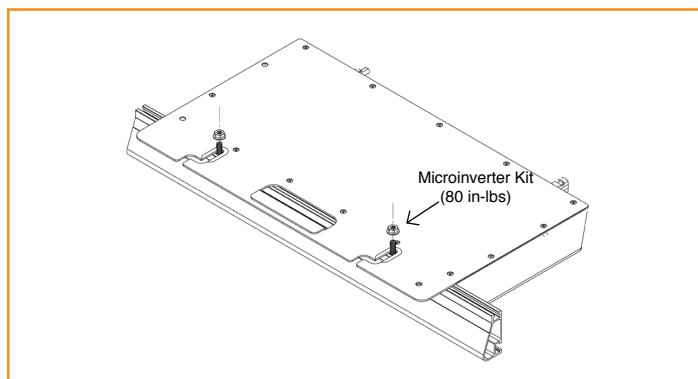
💡 A minimum of two inverters mounted to the same rail and connected to the same Engage cable are required.

💡 The microinverters or Sunpower AC modules must be used with a maximum 20 A branch rated overcurrent protection device (OCPD).

💡 If an AC module is removed from a circuit for maintenance, you must first disconnect AC power and then install a temporary EGC to bridge the gap by inserting an AC extension cable (or via other NEC-compliant means), in order to maintain effective ground continuity to subsequent modules.

SYSTEMS USING PHAZR MICROSTORAGE PRODUCTS

Bonding and grounding is achieved via the IronRidge system when using the Microinverter Kit. Running a separate equipment grounding conductor to the PHAZRs is not required.



FRAMELESS MODULE KITS

Insert Frameless Kit T-bolt in top rail slot. Place star washer over T-bolt, allowing it to rest on top of rail. Secure module clamps with a hex nut and torque to **80 in-lbs**.

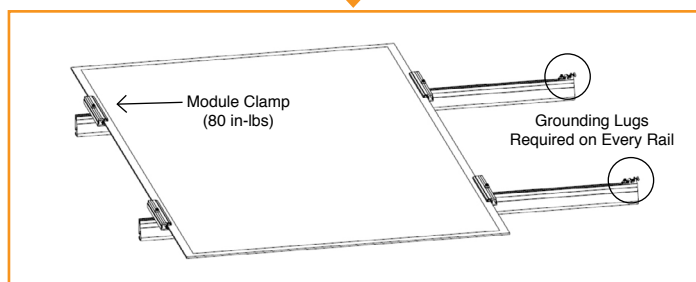
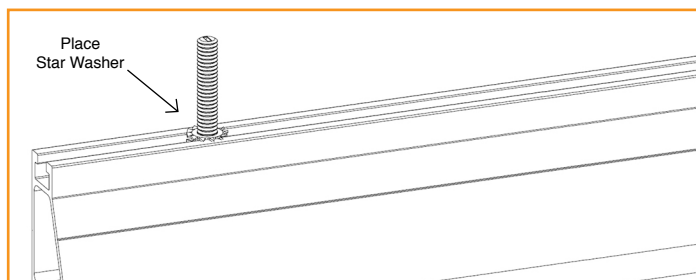
💡 **Tested or evaluated module clamps:**

- Sunforson silver or black SFS-UTMC-200(B) mid and SFS-UTEC-200(B) end clamps.
- Sunpreme silver or black mid and end clamps with part numbers 7500105X where "X" is 1, 5, 6 or 7.
- IronRidge silver or black mid and end clamps with part numbers FMLS-XC-001-Y where "X" is E or M and "Y" is B or blank.

💡 Follow module manufacturer's installation instructions to install the module clamps.

💡 Frameless modules require using a Grounding Lug on every rail.

💡 For Sunpreme Modules Only: If required to use slide prevention hardware, see Module Slide Prevention Addendum (Version 1.10).



MODULE COMPATIBILITY

The Tilt Mount 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. Unless otherwise noted, "xxx" refers to the module power rating and both black and silver frames are included in the certification.

MAKE	MODELS
Amerisolar	Amerisolar modules with 35, 40 and 50 mm frames AS-bYxxxZ Where "b" can be 5 or 6; "Y" can be M, P, M27, P27, M30, or P30; "xxx" is the module power rating; and "Z" can be blank, W or WB
Astronergy Solar	Astronergy modules with 30, 35, 40 and 45 mm frames aaSmbbyyC/zz-xxx Where "aa" can be CH or A; "bb" can be 60, 66, or 72; "yy" can be blank, 10 or 12; "C" can M, P, M(BL), M-HC, M(BL)-HC, P-HC, (DG), or (DGT); "zz" can be blank, HV, F-B, or F-BH ; and "xxx" is the module power rating Astronergy frameless modules CHSM6610P(DG)-xxx Where "xxx" is the module power rating
Auxin	Auxin modules with 40 mm frames AXN6y6zAxxx Where "y" can be M or P; "z" can be 08, 09, 10, 11, or 12; "A" can be F or T; and "xxx" is the module power rating
Axitec	Axitec Modules with 35 and 40 mm frames AC-xxxY/aaZZb Where "xxx" is the module power rating; "Y" can be M, P or MH; "aa" can be blank, 125- or 156-; "ZZ" can be 54, 60, 72, 120, or 144; "b" can be S or SB
Boviet	Boviet modules with 40mm frames BVM66aaYY-xxx Where "aa" can be 9, 10 or 12; "YY" is M or P; and "xxx" is the module power rating
BYD	Where "xxx" is the module power rating; "Y" can be M, P or MH; "aa" can be blank, 125- or 156-; "ZZ" can be 54, 60, 72, 120, or 144; "b" can be S or SB
Canadian Solar	Canadian Solar modules with 30, 35 and 40 mm frames CSbY-xxxZ Where "b" can be 1, 3 or 6; "Y" can be H, K, P, U, V, W, or X; "xxx" refers to the module power rating; and "Z" can be M, P, MS, PX , M-SD, P-AG, P-SD, MB-AG, PB-AG, MS-AG, or MS-SD Canadian Solar frameless modules CSbY-xxx-Z Where "b" can be 3 or 6; "Y" is K, P, U, or X; "xxx" is the module power rating, and "Z" can be M-FG, MS-FG, P-FG, MB-FG, or PB-FG
CertainTeed	CertainTeed modules with 35 and 40 frames CTxxxYZZ-AA Where "xxx" is the module power rating; "Y" can be M, P or HC; "ZZ" can be 00,01, 10, or 11; and "AA" can be 01, 02, 03 or 04
CSUN	Csun modules with 35 and 40 mm frames YYxxx-zzAbb Where "YY" is CSUN or SST; xxx is the module power rating; "zz" is blank, 60, or 72; and "A" is blank, P or M; "bb" is blank, BB, BW, or ROOF
Ecosolargy	Ecosolargy modules with 35, 40 and 50 mm frames ECOxxxYzza-bbD Where "xxx" is the module power rating; "Y" can be A, H, S, or T; "zz" can be 125 or 156; "A" can be M or P; "bb" can be 60 or 72; and "D" can be blank or B

MODULE COMPATIBILITY

ET Solar	ET Solar modules with 35, 40 and 50 mm frames ET-Y6ZZxxxAA Where “Y” can be P, L, or M; “ZZ” can be 60 or 72; “xxx” refers to the module power rating; and “AA” can be WB, WW, BB, WBG, WWG, WBAC, WBCO, WWCO, WWBCO or BBAC
Flex	Flex modules with 35, 40 and 50 mm frames and model identifier FXS-xxxYY-ZZ; where “xxx” is the module power rating; “YY” can be BB or BC; and “ZZ” can be MAA1B, MAA1W, MAB1W, SAA1B, SAA1W, SAC1B, SAC1W, SAD1W, SBA1B, SBA1W, SBC1B, or SBC1W
GCL	GCL modules with 35 mm and 40 mm frames GCL-a6/YY xxx Where “a” can be M or P; “YY” can be 60, 72, or 72H; and xxx is the module power rating
GigaWatt Solar	Gigawatt modules with 40 mm frames GWxxxYY Where “xxx” refers to the module power rating; and “YY” can be either PB or MB
Hansol	Hansol modules with 35 and 40 frames HSxxxYY-zz Where “xxx” is the module power rating; “YY” can be PB, PD, PE, TB, TD, UB, UD, or UE; and “zz” can be AN1, AN3, AN4, HV1, or JH2
Hanwha Solar	Hanwha Solar modules with 40, 45 and 50 mm frames HSLaaP6-YY-1-xxxZ Where “aa” can be either 60 or 72; “YY” can be PA or PB; “xxx” refers to the module power rating; and “Z” can be blank or B
Hanwha Q CELLS	Hanwha Q CELLS Modules with 32, 35, 40 and 42mm frames and model identifier aaYY-ZZ-xxx where “aa” can be Q. or B.; “YY” can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, or PEAK DUO; and “ZZ” can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, BLK-G5, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, G6+, BLK-G6, L-G6, L-G6.1, L-G6.2, L-G6.3, G7, BLK-G6+, BLK-G7, G7.2, G8, BLK-G8, G8+, BLK-G8+ L-G7, L-G7.1, L-G7.2, L-G7.3, L-G8, L-G8.1, L-G8.2, or L-G8.3; and “xxx” is the module power rating
Heliene	Heliene modules with 40 mm frames YYZZxxx Where “YY” can be 36, 60, 72, or 96; “ZZ” can be M, P, or MBLK; and “xxx” is the module power rating
HT-SAAE	HT-SAAE modules with 40 mm frames HT72-156Z-xxx Where “Z” can be M, P, M-C, P-C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C; and “xxx” is the module power rating
Hyundai	Hyundai modules with 33, 35, 40 and 50 mm frames HiY-SxxxZZ Where “Y” can be A, M or S; “xxx” refers to the module power rating; and “ZZ” can be HG, HI, KI, MI, MF, MG, RI, RG(BF), RG(BK), SG, TI, or TG
Itek	Itek Modules with 40 and 50 mm frames IT-xxx-YY Where “xxx” is the module power rating; and “YY” can be blank, HE, or SE, or SE72
JA Solar	JA Solar modules with 35, 40 and 45 mm frames JAyzzz-bbww-xxx/aa Where “yy” can be M, P, M6 or P6; “zz” can be blank, (K), (L), (R), (V), (BK), (FA), (TG), (FA)(R), (L)(BK), (L)(TG), (R)(BK), (R)(TG), (V)(BK), (BK)(TG), or (L)(BK)(TG); “bb” can be 48, 60, or 72; “ww” can be S01, S02, S03, S09, or S10; “xxx” is the module power rating; and “aa” can be MP, SI, SC, PR, 3BB, 4BB, 4BB/RE, 5BB
Jinko	Jinko modules with 35 and 40 mm frames JKMYxxxZZ-aa Where “Y” can either be blank or S; “xxx” is the module power rating; “ZZ” can be P, PP, M; and “aa” can be blank, 60, 60B, 60H, 60L, 60BL, 60HL, 60HBL, 60-J4, 60B-J4, 60B-EP, 60(Plus), 60-V, 60-MX, 72, 72-V, 72H-V, 72L-V, 72HL-V or 72-MX Jinko frameless modules JKMxxxPP-DV Where “xxx” is the module power rating
Kyocera	Kyocera Modules with 46mm frames KYxxxZZ-AA Where “Y” can be D or U; “xxx” is the module power rating; “ZZ” can be blank, GX, or SX; and “AA” can be LPU, LFU, UPU, LPS, LPB, LFB, LFBS, LFB2, LPB2, 3AC, 3BC, 3FC, 4AC, 4BC, 4FC, 4UC, 5AC, 5BC, 5FC, 5UC, 6BC, 6FC, 8BC, 6MCA, or 6MPA
LG	LG modules with 35, 40 and 46 mm frames LGxxxYaZ-bb Where “xxx” is the module power rating; “Y” can be A, E, N, Q, S; “a” can be 1 or 2; “Z” can be C, K, T, or W; and “bb” can be A3, A5, B3, G3, G4, K4, or V5
Longi	Longi modules with 30, 35 and 40 mm frames LRa-YYZZ-xxxM Where “a” can be 4 or 6; “YY” can be blank, 60 or 72; “ZZ” can be blank, BK, BP, HV, PB, PE, PH, HBD, HPB, or HPH; “xxx” is the module power rating
Mission Solar	Mission Solar modules with 40 mm frames MSEbbxxxZZaa Where “bb” can be blank or 60A; “xxx” is the module power rating; “ZZ” can be blank, MM, SE, SO or SQ, and “aa” can be blank, 1J, 4J, 4S, 5K, 5T, 6J, 6S, 6W, 8K, 8T, or 9S
Mitsubishi	Mitsubishi modules with 46 mm frames PV-MYYxxxZZ Where “YY” can be LE or JE; xxx is the module power rating; and “ZZ” can be either HD, HD2, or FB

MODULE COMPATIBILITY

Motech	IM and XS series modules with 40, 45 and 50 mm frames
Neo Solar Power	Neo Solar Power modules with 35 mm frames D6YxxxZZaa Where "Y" can be M or P; xxx is the module power rating; "ZZ" can be B3A, B4A, E3A, E4A, H3A, H4A; and "aa" can be blank, (TF), ME or ME (TF)
Panasonic	Panasonic modules with 35 and 40 mm frames BHNxxxYYzzA Where "xxx" refers to the module power rating; "YY" can be either KA, SA or ZA; "zz" can be either 01, 02, 03, 04, 06, 06B, 11, 11B, 15, 15B, 16, 16B, 17, or 18; and "A" can be blank, E or G
Peimar	Peimar modules with 40 mm frames SGxxxYzz Where "xxx" is the module power rating; "Y" can be M or P; and "zz" can be blank, (BF), or (FB)
Phono Solar	Phono Solar modules with 35, 40 and 45 mm frames PSxxxY-ZZ/A Where xxx refers to the module power rating; "Y" can be M or P; "ZZ" can be 20 or 24; and "A" can be F, T or U
Prism Solar	Prism Solar frameless modules BiYY-xxxBSTC Where "YY" can be 48, 60, 60S, 72 or 72S; and "xxx" is the module power rating
REC Solar	REC modules with 30, 38 and 45 mm frames RECxxxYYZZ Where "xxx" is the module power rating; "YY" can be AA, M, NP, PE, PE72, TP, TP2, TP2M, TP2SM, or TP2S; and "ZZ" can be blank, Black, BLK, BLK2, SLV, or 72
Renesola	ReneSola modules with 35, 40 and 50 mm frames JCxxxY-ZZ Where "xxx" refers to the module power rating; "Y" can be F, M or S; and "ZZ" can be Ab, Ab-b, Abh, Abh-b, Abv, Abv-b, Bb, Bb-b, Bbh, Bbh-b, Bbv, Bbv-b, Db, or Db-b
Renogy	Renogy Modules with 40 and 50 mm frames RNG-xxxY Where "xxx" is the module power rating; and "Y" can be D or P
Risen	Risen Modules with 35 and 40 mm frames RSMyy-6-xxxZZ Where "yy" can be 60 or 72; "xxx" is the module power rating; and "ZZ" can be M or P Frameless modules RSMyy-6-xxxZZ Where "yy" can be 60 or 72; "xxx" is the module power rating; and "ZZ" can be MDG or PDG
S-Energy	S-Energy modules with 40 frames SNxxxY-ZZ Where "xxx" is the module power rating; "Y" can be M or P; and "ZZ" can be 10, or 15
Seraphim Energy Group	Seraphim modules with 35 and 40 mm frames SEG-6YY-xxxZZ Where "YY" can be MA, MB, PA, or PB; "xxx" is the module power rating; and "ZZ" can be BB, BW, WB or WW
Seraphim USA	Seraphim modules with 40 and 50 mm frames SRP-xxx-6YY Where "xxx" is the module power rating; and "YY" can be MA, MB, PA, PB, QA-XX-XX, and QB-XX-XX
Sharp	Sharp modules with 35 and 40 mm frames NUYYxxx Where "YY" can be SA or SC; and "xxx" is the module power rating
Silfab	Silfab Modules with 38 mm frames SYZ-xxx Where "YY" can be SA or LA; SG or LG; "Z" can be M, P, or X; and "xxx" is the module power rating
Solaria	Solaria modules with 40 mm frames PowerXT xxxY-ZZ Where "xxx" is the module power rating; "Y" can be R or C; and "ZZ" can be AC, BD, BX, BY, PD, PX, PZ, WX or WZ
Solarcity	Solarcity modules with 40 mm frames SCxxxYY Where "xxx" is the module power rating; and "YY" can be blank, B1 or B2
SolarTech	SolarTech modules with 42 mm frames STU-xxxYY Where "xxx" is the module power rating; and "YY" can be PERC or HJT
SolarWorld AG / Industries GmbH	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 31, 33 or 46 mm frames SW-xxx Where "xxx" is the module power rating
SolarWorld Americas Inc.	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 33 mm frames SWA-xxx Where "xxx" is the module power rating
Stion	Stion Thin film modules with 35 mm frames STO-xxx or STO-xxxA Thin film frameless modules STL-xxx or STL-xxxA Where "xxx" is the module power rating
SunEdison	SunEdison Modules with 35, 40 and 50 mm frames SE-YxxxZABCDE Where "Y" can be B, F, H, P, R, or Z; "xxx" refers to the module power rating; "Z" can be 0 or 4; "A" can be B,C,D,E,H,I,J,K,L,M, or N ; "B" can be B or W; "C" can be A or C; "D" can be 3, 7, 8, or 9; and "E" can be 0, 1 or 2

MODULE COMPATIBILITY

Suniva	Suniva modules with 35, 38, 40, 46 and 50 mm frames OPTxxx-AA-B-YYY-Z MVXxxx-AA-B-YYY-Z Where "xxx" is the module power rating; "AA" is either 60 or 72; "B" is either 4 or 5; "YYY" is either 100,101,700,1B0, or 1B1; and "Z" is blank or B
Sunpower	Sunpower standard (G3 or G4) or InvisiMount (G5) 40 and 46 mm frames SPR-Zb-xxx-YY Where "Z" is either A, E, P or X; "b" can be blank, 17, 18, 19, 20, 21, or 22; "xxx" is the module power rating and "YY" can be blank, BLK, COM, C-AC, D-AC, E-AC, G-AC, BLK-C-AC, or BLK-D-AC
Sunpreme	Sunpreme frameless modules GXB-xxxYY Where "xxx" is the module power rating; and "YY" can be blank or SL
Sunspark	Sunspark modules with 40 mm frames SYY-xxZ Where "YY" can be MX or ST; "xxx" is the module power rating; and "Z" can be P or W
Suntech	Vd, Vem, Wdb, Wde, and Wd series modules with 35, 40 and 50 mm frames
Talesun	Talesun modules with 35 and 40 frames TP6yyZxxx-A Where "yy" can be 60, 72, H60 or H72; "Z" can be M, or P; "xxx" is the module power rating; and "A" can be blank, B, or T
Trina	Trina Modules with 30, 35, 40 and 46mm frames TSM-xxxYYZZ Where "xxx" is the module power rating; "YY" can be DD05, DD06, DE14, DE15, DEG15, PA05, PC05, PD05, PD06, PA14, PC14, PD14, PE14, or PE15 ; and "ZZ" can be blank, .05, .08, .10, .18, .08D, .18D, 0.82, .002, .00S, 05S, 08S, A, A.05, A.08, A.10, A.18, A(II), A.05(II), A.08(II), A.082(II), A.10(II), A.18(II), H, H(II), H.05(II), H.08(II), HC.20(II), HC.20(II), or M Frameless modules TSM-xxxYY Where "YY" can be either DEG5(II), DEG5.07(II), DEG5.40(II), DEG5.47(II), DEG14(II), DEG14C(II), DEG14C.07(II), DEG14.40(II), PEG5, PEG5.07, PEG5.40, PEG5.47, PEG14, or PEG14.40
Vikram	Vikram solar modules with 40 mm frames Syy.ZZ.AAA.bb Where "yy" can be M, P, MBB, MH, MS, MHBB, or PBB; "ZZ" can be 60 or 72; "AAA" is the module power rating; and "bb" can be 03.04 or 05
Winaico	Winaico modules with 35 and 40 mm frames Wsy-xxxz6 Where "y" can be either P or T; "xxx" is the module power rating; and "z" can be either M or P
Yingli	Panda, YGE and YGE-U series modules with 35, 40 and 50 mm frames