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 and any 3rd party manufacturer’s documentation for compatibility and compliance with warranty terms and conditions.
Ratings

UL 2703 Listed

• Certified to CSA STD 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 2703

• Any Roof Slope with Module Types 1, 2, 3, 13, 19, 25 & 29.
• 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.

Water Seal Ratings: UL 441 & TAS 100(A)-95 (Flashfoot2, All Tile Hook, Knockout Tile, Flashvue)

• Tested and evaluated without sealant.
• Any roofing manufacturer approved sealant is allowed. Ratings applicable for roof slopes between 2:12 and 12:12

Structural Certification

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

Florida Product Approval #FL29843

• Conforms to TAS202, TAS100(A)
• Approved for installation both inside and outside High Velocity Hurricane Zones (HVHZ)
• Allowable design pressure up to +100/-100 PSF
• Additional details and full list of approved components can be found Here.

Markings

Product markings are located on the Grounding Lug bolt head.
ATTACHMENTS

PRE-INSTALLATION
☐ Verify module compatibility. See Page 21 for info.

TOOLS REQUIRED
☐ Cordless Drill (non-impact) ☐ 7/32" Drill Bit
☐ Impact Driver (for lag bolts) ☐ 1/8" Drill Bit
☐ Torque Wrench (0-250 in-lbs) ☐ 1/4" Drill Bit
☐ 7/16" Socket ☐ T30 Bit
☐ 1/2" Socket ☐ Channel Lock Pliers
☐ 9/16" Socket ☐ #3 Phillips Bit

BONDING HARDWARE TORQUE VALUES
📍 Please refer to each attachment's individual section for full details on all torque values and instructions.

☐ 3/8" Bonding Hardware Nuts (7/16" Socket): 250 in-lbs
☐ All Tile Hook Carriage Bolts (7/16" Socket): 132 in-lbs
☐ Flat Roof Attachment Nuts (9/16" Socket): 250 in-lbs

If using FlashVue GripCap Plus or previous version of: FlashFoot, Integrated Grounding Mid Clamps, Grounding Lug, End Clamps, and Expansion Joints please refer to Alternate Components Addendum (Version 1.5).
PRE-INSTALLATION

☐ Verify module compatibility. See Page 21 for info.

TOOLS REQUIRED

☐ Cordless Drill (non-impact)
☐ Impact Driver (for lag bolts)
☐ Torque Wrench (0-250 in-lbs)
☐ 7/16" Socket
☐ 1/2" Socket
☐ 9/16" Socket
☐ 7/32" Drill bit
☐ 1/8" Drill bit
☐ 1/4" Drill bit
☐ T30 Bit
☐ Channel Lock Pliers
☐ #3 Phillips Bit
☐ Paddle Bit

BONDING HARDWARE TORQUE VALUES

☒ Please refer to each attachment's individual section for full details on all torque values and instructions.

☐ Bonded Splice Screws (5/16" Socket): 20 in-lbs
☐ Universal Fastening Object (7/16" Socket): 80 in-lbs
☐ Grounding Lug Nuts (7/16" Socket): 80 in-lbs
☒ Grounding Lug Terminal Screws (7/16" Socket): 20 in-lbs
☐ Expansion Joint Nuts (7/16" Socket): 80 in-lbs
☐ Microinverter Kit Nuts (7/16" Socket): 80 in-lbs
☐ Frameless Module Kit Nuts (7/16" Socket): 80 in-lbs
☐ 3/8" Bonding Hardware Nuts (7/16" Socket): 250 in-lbs

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1. PLACE ATTACHMENTS

The general installation method for attachments is to locate a rafter, drill a pilot hole and install the attachment. For composition roof attachments installation instructions refer to page 10. For tile roof attachments refer to page 12. For low slope roof attachments refer to page 13. When using approved third party attachments, refer to manufacturer's install instructions.

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 (z.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.
- EcoFasten Green Fasten GF-1 Anchors
- Rooftech RT-Mini - Attach to L-foot using 5/16-18 x 1.25" stainless steel bolt and nut torqued to 132 in-lbs.
- Quickscrews Solar Roof Hooks, E jot Aluminum Roof Hooks, Unirac Creotecc Tile Hooks, or Solarhooks - Attach to XR Rails with L-Foot or 3/8" Bonding Hardware Kit torqued to 250 in-lbs.
- Pegasus Comp Mount - Attach to XR Rail using 3/8" Bonding Hardware Kit torqued to 250 in-lbs.

2. PLACE RAILS

A. CONNECT SPICES

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 approximately 1" apart and tightening to **20 in-lbs**. Slide second rail over Bonded Splice and secure with two more 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. PREPARE HARDWARE

Slide square-headed bolts into side-facing rail slot. Space out bolts to match attachment spacing.

- Tape ends of rail, to keep bolts from sliding out while moving.
- If using T-bolts, carry hardware onto roof and proceed.

C. ATTACH RAILS

Drop rail with hardware into roof attachment. Level rail at desired height, then torque to **250 in-lbs**.

- Rail can face either upslope or downslope on roof.
3. 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 20).
- If using Enphase microinverters or Sunpower AC modules, Grounding Lugs may not be needed. See Page 9 for more info.
- Grounding Lugs can be installed anywhere along the rail and in either orientation shown. If installing lug underneath modules in areas with ground snow loads greater than 40 psf, place lug within 4 inches module frame edge.

4. 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, 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 19 for CAMO installation procedure.

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 18.

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 Clamps on rails, ensuring they are hooked over top of 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 6 for CAMO installation procedure.
CAMO

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).
- CAMO is not compatible with Canadian Solar modules.

8" BONDING JUMPER
8" Bonding Jumper is an electrical bonding jumper that can be used on the Flush Mount System for row to row bonding; making the module frames the medium for the equipment ground path.

- Bonding jumper is pushed onto the bottom flange of the module.
- New jumpers should be used if re-installation of jumper is required.
- Supports bottom flange thicknesses from 1.2mm to 3.1mm.
EXPANSION JOINTS

GROUNDING STRAP EXPANSION JOINT

Grounding Strap Expansion Joints are required every 100’ of continuous rail to allow for thermal expansion and contraction of the system.

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 break in row of modules.
- Do not install modules over expansion joints.
*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.

** The use of the 8” Bonding Jumper eliminates the need for row to row bonding. A minimum of one grounding lug per continuous array is required for earth ground.
FLASHFOOT2

Locate roof rafters and mark locations on roof. Drill 1/4” pilot holes perpendicular to the roof and back fill with roofing manufacturers’ approved sealant. Slide flashing between 1st and 2nd course of shingles, ensuring both that the flashing reaches under the 3rd shingle course and doesn’t overhang the downhill shingle course. Line up with pilot hole and insert supplied lag bolt with washer through flashing. With a 7/16” Socket fully seat lag bolt. Place Cap onto flashing in desired orientation for E/W or N/S rails and rotate 180 degrees until it locks into place.

rail can be installed on either side of FlashFoot2 Cap.

For additional details refer to the full FlashFoot2 Installation Manual.

FLASHVUE

Locate rafters and snap vertical and horizontal lines to mark locations of flashings. Drill 1/4” pilot holes, then backfill with an approved sealant. Slide flashing between 1st and 2nd course of shingles, ensuring both that the flashing reaches under the 3rd shingle course and doesn’t overhang the downhill shingle course. Line up pilot hole with View Port. Press Grip Cap onto flashing in desired orientation for E/W or N/S rails. Insert Lag Bolt with mechanically bonded washer through flashing. With a 7/16” Socket drive Lag Bolt until fully seated. FlashVue is now installed and ready for IronRidge XR Rails. Attach rails to either side of the open slot using bonding hardware. Level rail at desired height, then torque to 250 in-lbs (21 ft-lbs).

For additional details refer to the full FlashVue Installation Manual.
COMPOSITION SHINGLE

QMPV L-MOUNT

Locate roof rafters and mark locations on roof. Drill 7/32" (Lag) or 1/8" (ST) pilot holes perpendicular to the roof and back fill with roofing manufacturers' approved sealant. Slide flashing between 1st and 2nd course of shingles, ensuring both that the flashing reaches under the 3rd shingle course and doesn't overhang the downhill shingle course. Place L-foot on flute and rotate into desired position. Prepare lag bolt or structural screw with sealing washer. Use 1/2" socket to drive prepared lag bolt through L-foot until fully seated and L-foot can no longer rotate easily. Torque Nut to **156 in-lbs (13 ft-lbs)** for ST. Attach rail to L-Foot with Bonding Hardware and torque to **250 in-lbs (21 ft-lbs)**.

- Structural screw can be driven with T-30 hex head bit.
- For additional details refer to the full Quick Mount PV Installation Manual.

QMPV QBAS COMP MOUNT

Locate roof rafters and mark locations on roof. Align QBas horizontal holes over center rafter and mark. Drill two pilot holes with 7/32” drill bit, perpendicular to roof and back fill with roofing manufacturers' approved sealant. Set grade 8 cap screw through bottom of QBas, place QBas over drilled holes and secure lags. Screw Post to QBas. Proceed with roofing up until the flashing should be installed. Install flashing over mount. Allow roofing to proceed to the next course. Apply sealant where post and flashing meet, install EPDM counter flashing collar. Attach L-Foot on Standoff with hardware. Torque to **174 in-lbs** (14.5 ft-lbs). Attach rail to L-Foot with Bonding Hardware and torque to **250 in-lbs (21 ft-lbs)**.

- For additional details refer to the full Quick Mount PV Installation Manual.

QMPV CLASSIC COMP MOUNT

Locate roof rafters and mark locations on roof. Drill 7/32" pilot holes perpendicular to the roof and back fill with roofing manufacturers' approved sealant. Slide flashing between 1st and 2nd course of shingles, ensuring both that the flashing reaches under the 3rd shingle course and doesn't overhang the downhill shingle course. Prepare Hanger Bolt with Hex Nut and Sealing Washer, insert into hole and using 1/2" socket drive hanger bolt until fully seated and QBlock stops rotating easily. Insert EPDM rubber washer over hanger bolt into block, using Rack Kit hardware secure L-Foot to the mount. Torque to **156 in-lbs (13 ft-lbs)**. Attach rail to L-Foot with Bonding Hardware and torque to **250 in-lbs (21 ft-lbs)**.

- For additional details refer to the full Quick Mount PV Installation Manual.
**KNOCKOUT TILE**

Remove tile and mark rafter. Use base as guide to drill 1/4” pilot hole and fill with roofing manufacturer’s approved sealant. Insert lag bolt with bonded washer through base and drive until fully seated. Insert Tile Replacement Flashing, lower onto base and apply pressure over the threaded post until it dimples the flashing. Place L-Foot over dimple and tap with hammer to punch threaded post through the flashing. Ensure punched pieces of flashing are cleared away. Form flashing as needed to sit flush with surrounding tiles, position L-Foot in desired orientation and torque hardware to **132 in-lbs (11 ft-lbs)**. Attach rail to L-Foot with Bonding Hardware and torque to **250 in-lbs (21 ft-lbs)**.

- Base can be installed in any orientation relative to rafter.
- Ensure L-Foot does not extend above rail.
- If deck level flashing is required, approved flashing methods include user supplied adhesive backed flexible flashing.
- Standalone Knockout Tile manual available on website.

**QMPV TILE REPLACEMENT**

Remove tile and mark rafter. Measure up 8 3/4” from the adjacent tiles and mark horizontal across rafter. Align baseplate over rafter so that the lag holes align with the post groove. The orientation of the plate can be adjusted cross roof, mark location of lag holes on the roof. Drill two 1/8” Pilot holes and back fill with roofing manufacturers’ approved sealant. Waterproof at underlayment level according to roofing manufacturers’ instructions and the Tile Roofing Industry Alliance guidelines. Use T-30 Torx bit to lag base into position. Insert Grade 8 Serrated Flange Bolt into bottom of the Post, slide Post into Base channel. Line up post with the hole in the Tile Replacement Flashing. Leave loose for adjustments. Place Tile Replacement Flashing over the Post and Mount, allowing the flashing to properly interlock with surrounding tiles. Secure Post by tightening with channel lock pliers. Replace all tiles. Apply a bead of sealant where the post meets the flashing, slip EPDM collar over post and down to flashing. Attach L-Foot on Standoff with hardware. Torque to **174 in-lbs (14.5 ft-lbs)**. Attach rail to L-Foot with Bonding Hardware and torque to **250 in-lbs (21 ft-lbs)**.

- If deck level flashing is required, approved flashing methods include user supplied adhesive backed flexible flashing.
- For additional details refer to the full Quick Mount PV Installation Manual.
ALL TILE HOOK

Remove tile and mark rafter. Position base over rafter, adjust arm if necessary and torque hardware to **132 in-lbs (11 ft-lbs)**. Use base as guide to drill 1/4" pilot holes, back fill with roofing manufacturer’s approved sealant, then insert lag bolts and tighten until fully seated. Replace tiles and notch as necessary to ensure proper fit. Attach rails to either side of slot using Bonding Hardware and torque to **250 in-lbs (21-ft-lbs)**.

- Position arm near the center of valley for curved tiles.
- Position arm away from seam of joining flat tiles.
- Ensure top of hook does not extend above rail.
- IronRidge offers an optional aluminum deck flashing. Refer to All Tile Hook Flashing Installation Manual. Other approved flashing methods include user supplied adhesive backed flexible flashing.
- Standalone All Tile Hook manual available on website.

QMPV QUICK HOOK

Remove tile and mark rafter, use Base Plate to mark two holes on rafter. Drill two 7/32" pilot holes and back fill with roofing manufacturers’ approved sealant. Use 1/2" socket to drive lag into place. Slide hook into place and adjust to desired position. Drive self-tapping screw using a #3 Phillips bit to lock hook in place. Clean underlayment and apply a bead of sealant compatible with roofing manufacturer, install flashing over mount. Fasten sub-flashing to deck with one roofing nail in each corner. Waterproof at underlayment level according to roofing manufacturers’ instructions and the Tile Roofing Industry Alliance guidelines. Cut clearance notch in the weather guard of tile as needed or utilize QMPV Tile Replacement Flashings. Attach rails to either side of slot using Bonding Hardware and torque to **250 in-lbs (21-ft-lbs)**.

- Position arm near the center of valley for curved tiles.
- Position arm away from seam of joining flat tiles.
- Ensure top of hook does not extend above rail.
- For additional details refer to the full Quick Mount PV Installation Manual.
TILE

QMPV QBASE UNIVERSAL TILE MOUNT

Remove tile and mark rafter. Measure up 6 5/8” from bottom of tiles and mark horizontally. Align QBase over rafter center and drill two 7/32” pilot holes, back fill with roofing manufacturers’ approved sealant. Place grade-8 Cap Screw under QBase, lag QBase into rafter location. Install Sub-flashing, waterproof at underlayment level according to roofing manufacturers’ instructions and the Tile Roofing Industry Alliance guidelines. Cut tile with diamond blade to allow post to pass through. Place tile in position and then install Post. Install 18”x18” flashing, pre-bent to follow the contour of the tile as required. Apply sealant where Post and Flashing meet and install EPDM counter flashing. Attach L-Foot on Standoff with hardware. Torque to 174 in-lbs (14.5 ft-lbs). Attach rails to L-Foot using Bonding Hardware and torque to 250 in-lbs (21-ft-lbs).

For additional details refer to the full Quick Mount PV Installation Manual.

ADDITIONAL ROOF TYPES

QMPV CLASSIC SHAKE MOUNT

Locate roof rafters and mark locations on roof, remove shakes directly above mount if needed to expose felt paper. Level out installation area and location installation point, mark. Drill 7/32” pilot hole, back fill with roofing manufacturers’ approved sealant. Prepare Hanger Bolt with Hex Nut and Sealing washer, insert into QBlock hole and drive into rafter until fully seated and the QBlock no longer swivels easily. Insert EPDM washer over hanger bolt and then install L-Foot in desired orientation and torque hardware to 132 in-lbs (11 ft-lbs). Attach rail to L-Foot with Bonding Hardware and torque to 250 in-lbs (21 ft-lbs).

For additional details refer to the full Quick Mount PV Installation Manual.

QMPV QBASE METAL, SHAKE AND SLATE

The QMPV QBase can be used to install on multiple roofing types with different installation methods.

For instructions on installing the QBase on Slate refer to the full Quick Mount PV Installation Manual.

For instructions on installing the QBase on Shake refer to the full Quick Mount PV Installation Manual.

For instructions on installing the QBase on Metal Shingle refer to the full Quick Mount PV Installation Manual.
LOW SLOPE ROOFS

FLAT ROOF ATTACHMENT

Flat Roof Attachment can be used with an L-foot for flush mounting modules on low sloped roofs. Mark locations for Flat Roof Attachment. 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. Attach L-foot with washers and 3/8” hardware torqued to **250 in-lbs (21 ft-lbs)**. Seal attachment and/or membrane per roofing manufacturer’s requirements.

- Type, size, and quantity of roof screws to be specified by Structural Engineer. Fastener size not to exceed #15.
- Membrane flashing available for TPO, PVC, and KEE roofs. Ensure membrane flashing is compatible with existing roofing material.
- If membrane flashing is not used, only washer on top of L-Foot is required.
- Standalone Flat Roof Attachment Manual available on website.

QMPV QBASE MOUNT

Locate the desired mount placement over a rafter. Using the base as a template, mark the two penetration points. Drill two 7/32” pilot holes, back fill with roofing manufacturers’ approved sealant. Place the grade-8 hex bolt in the bottom of the base and screw the Post. Attach L-Foot on Standoff with hardware. Torque to **174 in-lbs (14.5 ft-lbs)**. Attach rail to L-Foot with Bonding Hardware and torque to **250 in-lbs (21 ft-lbs)**.

The mount can be flashed with available 9”, 12” or 18” aluminum flashings, pitch pocket or curb, or with a membrane cone flashing. If using a membrane flashing utilize the services of a qualified roofer.

For additional details refer to the full Quick Mount PV Installation Manual.

FLUSH STANDOFFS

Attach Standoffs to roof locations with lag bolts (not included). Place flashing over Standoff. Attach L-Foot on Standoff washer with hardware. Torque to **132 in-lbs (11 ft-lbs)**.
CONDUIT PENETRATION FLASHINGS

QMPV CONDUIT PENETRATION FLASHING - COMP SHINGLE

Mark a drill point so that the flashing reaches up to the 3rd shingle course. Drill your conduit hole next to the rafter so you can secure the conduit below the roof surface. Cut shingle and remove nails as needed to center the drilled hole and flashing hole. Apply roofing manufacturer's approved sealant on the underside of the flashing in a Upside down U and to top of flashing. Under the 3rd course and through the second course secure flashing with 2 roofing nails, apply sealant over the nail heads. Cut EPDM collar to appropriate size. Apply a bead of sealant compatible with the roofing manufacturer and EPDM rubber to anywhere the EPDM collar contacts.

- Be sure to secure conduit to rafters below the roof surface per local building codes and NEC code requirements.
- Cut EPDM collar to appropriate size using the sizing chart in the installation manual, approved for 1/2” to 1” EMT.
- For additional details refer to the full Quick Mount PV Installation Manual.

QMPV CONDUIT PENETRATION FLASHING - TILE

Drill your conduit hole next to the rafter so that you can secure the conduit below the roof surface. Apply roofing manufacturer approve sealant to the underside of the sub-flashing in the shape of an upside down U. Clear away any dust and debris to install sub-flashing. Waterproof at under laminate level according to roofing manufacturer instructions and Tile Roofing Institute Guidelines. Under the top layer of felt, secure the sub-flashing with two roofing nails. Cut EPDM collar to appropriate size. Apply a bead of sealant compatible with the roofing manufacturer and EPDM rubber to anywhere the EPDM collar contacts. With a diamond blade cut tile to allow conduit to pass through, replace all tiles. Bend the flashing to follow the contour of the tiles. Place flashing over the conduit and tuck up under the next course of tiles. Apply a bead of sealant compatible with the roofing manufacturer and EPDM rubber to anywhere the EPDM collar contacts. Slide collar onto conduit all the way down to the flashing.

- Be sure to secure conduit to rafters below the roof surface per local building codes and NEC code requirements.
- Cut EPDM collar to appropriate size using the sizing chart in the installation manual, approved for 1/2” to 1” EMT.
- For additional details refer to the full Quick Mount PV Installation Manual.
CONDUIT MOUNT

QMPV CONDUIT MOUNT - COMPOSITION SHINGLE

Place conduit mounts along path of conduit. Lift shingle above mount location and insert flashing into position. Mark center for drilling, remove flashing and drill pilot hole with 1/8" bit. Clean area, fill hole with roofing manufacturer's approved sealant. Lift shingle and slide Conduit Mount into place. Prepare the lag bolt with sealing washer and pipe clamp (not included). Insert lag through hole in block and drill with 7/16" socket until block is tight.

- Install mounts as required to support conduit across the roof.
- For additional details refer to the full Quick Mount PV Installation Manual.

QUICK MOUNT PV CONDUIT MOUNT - TILE

Remove the tile that the mount will be installed on, and the tiles in the course above it. Lift the bottom of the tile and slide the bottom clamp over the bottom edge of the tile. Insert the 4" tap bolt through the slot into the threaded hole and use a 7/16" socket to thread the screw. Tighten until the top clamp hook end unbends and forms a 90 degree angle with the tile. Use the Cap Screw (included) to attach your pipe clamp (not included) to bottom clamp. Insert conduit and tighten with 7/16" socket.

- The clamp is reversible, use the wider hook end on tile greater than 1" thick and the thinner hook end on tiles less than 1" thick.
- The installation process is the same on curved tile, make sure that the Conduit Mount is installed on the crown (high point) of the tile.
- Install mounts as required to support conduit across the roof.
- For additional details refer to the full Quick Mount PV Installation Manual.
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.

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.

QUICK MOUNT PV QBOX

The QBox™ is a flashed junction box with Quick Mount PV patented Elevated Water Seal Technology™, and provides a waterproof pass-through for conduit from the box enclosure to the attic. QBox comes equipped with fasteners to install to the roof deck, and fittings for optional through-the-deck conduit attachment. The QBox is designed to transition or combine up to two (2) strings of conductors utilizing user-supplied wiring components and water-tight fittings.

For more information and full instructions please refer to full Quick Mount PV Installation Manual.

The QBOX is only certified for use on composition shingle roofs.
**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, install MLPE devices directly next to module frame edge.

### COMPATIBLE PRODUCTS

**Enphase**
- M250-72, 250-60, M215-60, C250-72, S230, S280, IQ 6, IQ 6+, IQ IQ7, IQ 7A, IQ 7+, IQ 7X, Q Aggregator

**Darfon**
- MIG240, MIG300, G320, G640

**Solar Edge**
- P300, P320, P340, P370, P400, P405, P485, P505, P600, P700, P730, P800p, P800s, P850, P860

**SMA**
- RoofCommKit-P2-US, TS4-R Module Retrofit Kits (TS4-R-S, TS4-R-O, TS4-R-F)

**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 (where X can be F, 2F, O, O-DUO, or S)

**AP Systems**
- QS1, YC600

⚠️ Remove Grounding Washer on AP Systems QS1 and YC600 inverters before installing to XR rails.

⚠️ Remove the Stainless Steel Clip on Tigo-“A” MLPE Devices before attaching to XR rails.

⚠️ Use the number of IronRidge Microinverter kits allowed by the MLPE mounting flange. Some will require 1 kit and others 2 kits.

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**SYSTEMS USING ENPHASE MICROINVERTERS OR SUNPOWER AC MODULERS**

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.

### COMPATIBLE PRODUCTS

**Sunpower**
- 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.

**Enphase**

⚠️ 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.
Use IronRidge's Microinverter Kit to bond compatible microstorage 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**.

### 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

- 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.

### 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**.

### COMPATIBLE PRODUCTS

**Sunforson**
- Sunforson silver or black SFS-UTMC-200(B) mid and SFS-UTE-200(B) end clamps.

**Sunpreme**
- Sunpreme silver or black mid and end clamps with part numbers 7500105X where “X” is 1, 5, 6 or 7.

**IronRidge**
- 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 Flush Mount System may be used to ground and/or mount a PV module complying with UL 2703 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.

<table>
<thead>
<tr>
<th>MAKE</th>
<th>MODELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adani</td>
<td>Adani modules with 40mm frames</td>
</tr>
<tr>
<td></td>
<td>ASX-Y-ZZ-xxx</td>
</tr>
<tr>
<td></td>
<td>Where &quot;X&quot; can be M or P, &quot;Y&quot; can be 6 or 7, and &quot;ZZ&quot; can be blank, PERC,</td>
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<tr>
<td></td>
<td>B-PERC, or AB-PERC</td>
</tr>
<tr>
<td>Amerisolar</td>
<td>Amerisolar modules with 35, 40 and 50 mm frames</td>
</tr>
<tr>
<td></td>
<td>AS-bYxxxZ</td>
</tr>
<tr>
<td></td>
<td>Where &quot;b&quot; can be 5 or 6; &quot;Y&quot; can be M, P, M27, P27, M30, or P30; and</td>
</tr>
<tr>
<td></td>
<td>&quot;Z&quot; can be blank, W or WB</td>
</tr>
<tr>
<td>Aptos Solar</td>
<td>Aptos modules with 35 and 40 mm frames</td>
</tr>
<tr>
<td></td>
<td>DNA-y-yzz23-xxx</td>
</tr>
<tr>
<td></td>
<td>Where &quot;yy&quot; can be 120 or 144; and &quot;zz&quot; can be MF or BF</td>
</tr>
<tr>
<td>Astronergy Solar</td>
<td>Astronergy modules with 30, 35, 40, and 45 mm frames</td>
</tr>
<tr>
<td></td>
<td>aaSmbyyyC/zz-xxx</td>
</tr>
<tr>
<td></td>
<td>Where &quot;aa&quot; can be CH or A; &quot;bb&quot; can be 60, 66, or 72; &quot;yy&quot; can be blank,</td>
</tr>
<tr>
<td></td>
<td>10 or 12; &quot;C&quot; can M, P, M(BL), M-HC, M(BL)-HC, P-HC, M(DG), or M(DGT);</td>
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<tr>
<td></td>
<td>and &quot;zz&quot; can be blank, HV, F-B, or F-BH</td>
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<tr>
<td>ASUN</td>
<td>ASUN modules with 35 and 40 mm frames</td>
</tr>
<tr>
<td></td>
<td>ASUN-xxx-YYZZ-aa</td>
</tr>
<tr>
<td></td>
<td>Where &quot;YY&quot; can be 60 or 72; &quot;ZZ&quot; can be M, or MH5; and &quot;aa&quot; can be blank</td>
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<tr>
<td></td>
<td>or BB</td>
</tr>
<tr>
<td>Auxin</td>
<td>Auxin modules with 40 mm frames</td>
</tr>
<tr>
<td></td>
<td>AXN6y6zAxxx</td>
</tr>
<tr>
<td></td>
<td>Where &quot;y&quot; can be M or P; &quot;z&quot; can be 08, 09, 10, 11, or 12; and &quot;A&quot; can</td>
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<tr>
<td></td>
<td>be F or T</td>
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<tr>
<td>Axitec</td>
<td>Axitec Modules with 35 and 40 mm frames</td>
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<tr>
<td></td>
<td>AC-xxxY/aaZZb</td>
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<tr>
<td></td>
<td>Where &quot;Y&quot; can be M, P or MH; &quot;aa&quot; can be blank, 125- or 156-; &quot;ZZ&quot; can</td>
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<td></td>
<td>be 54, 60, 72, 120, or 144; &quot;b&quot; can be S</td>
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<tr>
<td>Boviet</td>
<td>Boviet modules with 35 and 40 mm frames</td>
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<tr>
<td></td>
<td>BVM66aaYY-xxxBB</td>
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<tr>
<td></td>
<td>Where &quot;aa&quot; can be 9, 10 or 12; &quot;YY&quot; is M or P; and &quot;BB&quot; can be blank or</td>
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<tr>
<td>BYD</td>
<td>BYD modules with 35 mm frames</td>
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<tr>
<td></td>
<td>BYDxxxAY-ZZ</td>
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<tr>
<td></td>
<td>Where &quot;A&quot; can be M6, P6, MH or PH; &quot;Y&quot; can be C or K; and &quot;ZZ&quot; can be</td>
</tr>
<tr>
<td></td>
<td>30 or 36</td>
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<tr>
<td>Canadian Solar</td>
<td>Canadian Solar modules with 30, 35 and 40 mm frames</td>
</tr>
<tr>
<td></td>
<td>CSbY-xxxZ</td>
</tr>
<tr>
<td></td>
<td>Where &quot;b&quot; can be 1, 3 or 6; &quot;Y&quot; can be H, K, P, U, V, W, or X; and &quot;Z&quot;</td>
</tr>
<tr>
<td></td>
<td>can be M, P, MS, PX , M-SD, P-AG, P-SD, MB-AG, PB-AG, MS-AG, or MS-SD</td>
</tr>
<tr>
<td>CertainTeed</td>
<td>CertainTeed modules with 35 and 40 frames</td>
</tr>
<tr>
<td></td>
<td>CTxxxYZZ-AA</td>
</tr>
<tr>
<td></td>
<td>Where &quot;Y&quot; can be M, P, or HC; &quot;ZZ&quot; can be 00,01, 10, or 11; and &quot;AA&quot;</td>
</tr>
<tr>
<td></td>
<td>can be 01, 02, 03, or 04</td>
</tr>
<tr>
<td>CSUN</td>
<td>CSUN modules with 35 and 40 mm frames</td>
</tr>
<tr>
<td></td>
<td>YYxxx-zzAbb</td>
</tr>
<tr>
<td></td>
<td>Where &quot;YY&quot; is CSUN or SST; &quot;zz&quot; is blank, 60, or 72; and &quot;A&quot; is blank,</td>
</tr>
<tr>
<td></td>
<td>P or M; &quot;bb&quot; is blank, BB, BW, or ROOF</td>
</tr>
<tr>
<td>Ecosolargy</td>
<td>Ecosolargy modules with 35, 40, and 50 mm frames</td>
</tr>
<tr>
<td></td>
<td>ECOxxxYzzA-bbD</td>
</tr>
<tr>
<td></td>
<td>Where &quot;YY&quot; can be A, H, S, or T; &quot;zz&quot; can be 125 or 156; &quot;A&quot; can be M</td>
</tr>
<tr>
<td></td>
<td>or P; &quot;bb&quot; can be 60 or 72; and &quot;D&quot; can be blank or B</td>
</tr>
<tr>
<td>ET Solar</td>
<td>ET Solar modules with 35, 40, and 50 mm frames</td>
</tr>
<tr>
<td></td>
<td>ET-Y6ZZxxxAA</td>
</tr>
<tr>
<td></td>
<td>Where &quot;Y&quot; can be P, L, or M; &quot;ZZ&quot; can be 60 or 72; and &quot;AA&quot; can be WB,</td>
</tr>
<tr>
<td></td>
<td>WW, BB, WBG, WWG, WBAC, WBCO, WWCO, WWBCO or BBAC</td>
</tr>
<tr>
<td>Module Type</td>
<td>Compatibility Details</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------</td>
</tr>
</tbody>
</table>
| Flex        | Flex modules with 35, 40, and 50 mm frames  
FSxxYY-ZZ  
Where "YY" can be BB or BC; and "ZZ" can be MAA1B, MAA1W, MAB1W, SAA1B, SAA1W, SAC1B, SAC1W, SAD1W, SBA1B, SBA1W, SBC1B, or SBC1W |
| GCL         | Flex modules with 35 mm and 40 mm frames  
GCL-ab/YY  
Where "a" can be M or P; "b" can be 3 or 6; and "YY" can be 60, 72, 72H, or 72DH |
| GigaWatt Solar | Gigawatt modules with 40 mm frames  
GWxxxYY  
Where "YY" can be either PB or MB |
| Hansol      | Hansol modules with 35 and 40 frames  
HSxxxYY-zz  
Where "YY" can be PB, PD, PE, TB, TD, UB, UD, or UE; and "zz" can be AH2, AN1, AN3, AN4, HV1, or JH2 |
| Hanwha Solar | Hanwha Solar modules with 40, 45, and 50 mm frames  
HSLaap-YY-1-xxxZ  
Where "aa" can be either 60 or 72; "YY" can be PA or PB; and "Z" can be blank or B |
| Hanwha Q CELLS | Hanwha Q CELLS Modules with 32, 35, 40, and 42 mm frames  
aaYY-ZZ-xxx  
| Heliene     | Heliene modules with 40 mm frames  
YYZxxxA  
Where "YY" can be 36, 60, 72, or 96; "ZZ" can be M, P, or MBLK; and "A" can be blank, HomePV, or Bifacial |
| HT-SAAE     | HT-SAAE modules with 35 and 40 mm frames  
HTyy-156Z-xx  
Where "yy" can be 60 or 72, "Z" can be M, P, C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C |
| Hyundai     | Hyundai modules with 33, 35, 40 and 50 mm frames  
HIY-SxxZZ  
Where "YY" can be A, D, M or S; and "ZZ" can be HG, HI, MI, MF, MG, RI, RG, RG(BF), RG(BK), SG, TI, or TG |
| Itek        | Itek Modules with 40 and 50 mm frames  
IT-xxYY  
Where "YY" can be blank, HE, or SE, or SE72 |
| JA Solar    | JA Solar modules with 30, 35, 40 and 45 mm frames  
JAyzz-bbwv-xx/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 D09, S01, S02, S03, S06, S09, S10, or S12; and "aa" can be BP, MP, SI, SC, PR, 3BB, 4BB, 4BB/RE, 5BB |
| Jinko       | Jinko modules with 35 and 40 mm frames  
JKMYYxxxxZ-aa  
Where "YY" can either be blank or S; "ZZ" can be M, P, or PP; and "aa" can be blank, 60, 60B, 60H, 60L, 60BL, 60HBL, 60-J4, 60B-J4, 60B-EP, 60(Plus), 60-V, 60-MX, 72, 72-V, 72H-V, 72L-V, 72HL-V, 72-MX, 72H-BDV, or 72HL-TV |
| Kyocera     | Kyocera Modules with 46mm frames  
KYYzzZ-AAA  
Where "YY" can be D or U; "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, 8MC, or 6MPA |
| LG          | LG modules with 35, 40, and 46 mm frames  
LGxxxYaZ-bb  
Where "YY" 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, J5, K4, or V5 |
<table>
<thead>
<tr>
<th>Module Compatibility</th>
<th>Module Details</th>
</tr>
</thead>
</table>
| **Longi** | Longi modules with 30, 35 and 40 mm frames  
LRa-YYZ-xxxM  
Where "a" can be 4 or 6; "YY" can be blank, 60 or 72; and "ZZ" can be blank, BK, BP, HV, PB, PE, PH, HBD, HPB, or HPH |
| **Mission Solar** | Mission Solar modules with 33 and 40 mm frames  
MSEbbxxxZzaa  
Where "bb" can be blank or 60A; "ZZ" can be blank, MM, SE, SO, SQ, SR, or TS; 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-MYXxxxZZ  
Where "YY" can be LE or JE; and "ZZ" can be either HD, HD2, or FB |
| **Motech** | IM and XS series modules with 40, 45, and 50 mm frames |
| **Next Energy Alliance** | Next Energy Alliance modules with 35 and 40mm frames  
yyNEA-xxxZZ  
where "yy" can be blank or US; "ZZ" can be M, MB or M-60 |
| **Neo Solar Power** | Neo Solar Power modules with 35 mm frames  
D6YxxxZzaa  
Where "YY" can be blank or M; "ZZ" can be B3A, B4A, E3A, E4A, H3A, H4A; and "aa" can be blank, (TF), ME or (ME) |
| **Panasonic** | Panasonic modules with 35 and 40 mm frames  
VBHxxxYYzzA  
Where "YY" can be either KA, RA, 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, G, or N |
| **Peimar** | Peimar modules with 40 mm frames  
SbxxxYzz  
Where "b" can be G, M or P; "Y" can be M or P; and "zz" can be blank, (BF) or (FB) |
| **Philadelphia Solar** | Philadelphia modules with 35 and 40 mm frames  
PS-YzxA-xxx  
Where "YY" can be blank or M; "zz" can be 60 or 72; and "AA" can be blank or (BF) |
| **Phono Solar** | Phono Solar modules with 35, 40, and 45 mm frames  
PSxxxY-ZZ/A  
Where "YY" can be M, M1, MH, or M1H or P; "ZZ" can be 20 or 24; and "A" can be F, T, U, or TH |
| **Recom** | Recom modules with 35 and 40 mm frames  
RCM-xxx-6yy  
Where "yy" can be MA or MB |
| **REC Solar** | REC modules with 30, 38 and 45 mm frames  
RECxxxYYZZ  
Where "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  
AxxxY-ZZ  
Where "AA" can be SPM(SLP) or JC; "Y" can be blank, F, M or S; and "ZZ" can be blank, Ab, Ab-b, Abh, Abh-b, Abv, Abv-b, Bb, Bbh-b, Bb, Bb, Bb, Bb, Bv, Bv-b, Db, Db-b, or 24/Bb |
| **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 30, 35 and 40 mm frames  
RSMyy-6-xxxZZ  
Where "yy" can be 60, 72, 120, 132 or 144; and "ZZ" can be M, P or BMDG |
| **S-Energy** | S-Energy modules with 40 frames  
SNxxxY-ZZ  
Where "YY" can be blank, 6 or B; "YY" can be blank, MA, MB, PA, or PB; and "ZZ" can be blank, BB, BG, BW, HV, WB, WW, BMD-HV |
| **Seraphim Energy Group** | Seraphim modules with 35 and 40 mm frames  
SEG-aYY-xxxZZ  
Where "a" can be blank, 6 or B; "YY" can be blank, MA, MB, PA, or PB; and "ZZ" can be blank, BB, BG, BW, HV, WB, WW, BMD-HV |
# Module Compatibility

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Modules with Frame and Frame Size</th>
<th>Module Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seraphim USA</td>
<td>Seraphim modules with 40 and 50 mm frames SRP-xxx-6YY</td>
<td>Where &quot;xxx&quot; is the module power rating; and &quot;YY&quot; can be MA, MB, PA, PB, QA-XX-XX, and QB-XX-XX</td>
</tr>
<tr>
<td>Sharp</td>
<td>Sharp modules with 35 and 40 mm frames NUYYxxx</td>
<td>Where “YY” can be SA or SC</td>
</tr>
<tr>
<td>Silfab</td>
<td>Silfab Modules with 38 mm frames SYY-Z-xxxxAb</td>
<td>Where “YY” can be IL, SA, LA, SG or LG; “Z” can be blank, M, P, or X; &quot;A&quot; can be blank, B, H, M, or N; and &quot;b&quot; can be A, L, G, or T</td>
</tr>
<tr>
<td>Soloria</td>
<td>Solaria modules with 40 mm frames PowerXT xxxY-ZZ</td>
<td>Where &quot;YY&quot; can be R or C; and &quot;ZZ&quot; can be AC, BD, BX, BY, PD, PM, PM-AC, PX, PZ, WX or WZ</td>
</tr>
<tr>
<td>Solarcity (Tesla)</td>
<td>Solarcity modules with 40 mm frames SCxxxYY</td>
<td>Where “YY” can be blank, B1 or B2</td>
</tr>
<tr>
<td>SolarTech</td>
<td>SolarTech modules with 42 mm frames STU-xxxYY</td>
<td>Where “YY” can be PERC or HJT</td>
</tr>
<tr>
<td>SolarWorld AG</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>SolarWorld Americas</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>Stion</td>
<td>Stion Thin film modules with 35 mm frames STO-xxx or STO-xxxA</td>
<td></td>
</tr>
<tr>
<td>SunEdison</td>
<td>SunEdison Modules with 35, 40 &amp; 50 mm frames SE-YxxxZABCDDE</td>
<td>Where “Y” can be B, F, H, P, R, or Z; “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</td>
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<tr>
<td>Suniva</td>
<td>Suniva modules with 35, 38, 40, 46, and 50 mm frames OPTxxx-AB-YY-ZMVxxx-AB-YY-Z</td>
<td>Where “AA” is either 60 or 72; “B” is either 4 or 5; “YYY” is either 100,101,700,1B0, or 1B1; and “ZZ” is blank or B</td>
</tr>
<tr>
<td>Sunpower</td>
<td>Sunpower standard (G3 or G4) or InvisiMount (G5) 40 and 46 mm frames SPR-Zb-xxx-YY</td>
<td>Where “Z” is either A, E, P or X; “b” can be blank, 17, 18, 19, 20, 21, or 22; and “YY” can be blank, BLK, COM, C-AC, D-AC, E-AC, G-AC, BLK-C-AC, or BLK-D-AC</td>
</tr>
<tr>
<td>Sunspark</td>
<td>Sunspark modules with 40 mm frames SYY-xxxZ</td>
<td>Where “YY” can be MX or ST; and “Z” can be M, MB, P or W</td>
</tr>
<tr>
<td>Suntech</td>
<td>Suntech Modules with 35, 40 and 50 mm frames STPxy-zzaa</td>
<td>Where “y” is blank or S; and “zz” can be 20, 24; and “aa” can be Vd, Vem, Vfw, Wdb, Wde or Wd</td>
</tr>
<tr>
<td>Talesun</td>
<td>Talesun modules with 35 and 40 frames TP6yZZaaxxx-b</td>
<td>Where “y” can be blank, F or H; “ZZ” can be 60 or 72; “aa” can be M or P; and “b” can be blank, B, T, or (H)</td>
</tr>
<tr>
<td>Trina</td>
<td>Trina Modules with 30, 35, 40 and 46 mm frames TSM-xyYYYY</td>
<td>Where “YY” can be DD05, DD06, DD14, DE14, DE15, DEG15, PA05, PC05, PD05, PD06, PA14, PC14, PD14, PE14, or PE15; and “ZZ” can be blank, .05, .08, 10, 18, .08D, .18D, .02, .002, .00S, .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), H.05(II), H.08(II), H.08(II), HC.20(II), HC.20(II), or M</td>
</tr>
</tbody>
</table>
### MODULE COMPATIBILITY

<table>
<thead>
<tr>
<th>MAKE</th>
<th>MODELS</th>
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</table>
| URE  | URE modules with 35 mm frames  
DyZxxxHaa  
Where "y" can be 6 or 7; "Z" can be K or M; and "aa" can be H3A, H4A, or H8A |
| Vikram | Vikram solar modules with 40 mm frames  
V$\mathrm{S}$$\mathrm{y}$y.ZZ.AAA.bb  
Where "yy" can be M, P, MBB, MH, MS, MHBB, or PBB; "ZZ" can be 60 or 72; "AAA" is the module power rating; and "bb" can be 03.04 or 05 |
| VSUN | VSUN modules with 35 and 40 mm frames  
V$\mathrm{S}$$\mathrm{U}$$\mathrm{N}$xxx-YYz-aa  
Where "YY" can be 60, 72, 120, or 144; "Z" can be M, P, MH, PH, or BMH; and "aa" can be blank, BB, or DG |
| Waaree | Waaree modules with 40mm frames  
W$\mathrm{S}$$\mathrm{y}$y-xxx  
where "y" can be blank, M, or MB |
| Winaico | Winaico modules with 35 and 40 mm frames  
W$\mathrm{y}$y-xxxZa  
Where "y" can be either P or T; "Z" can be either M, P, or MX; and "a" can be blank or 6 |
| Yingli | Panda, YGE, YGE-U, and YLM series modules with 35, 40, and 50 mm frames |
| ZNShine | ZNShine Modules with 30, 35, and 40mm frames  
Z$\mathrm{Y}$y6-ZZa-xxx/b  
Where "y" can be M or P; "ZZ" can be blank, H, HLD, HLDD, LD, LDD, NH, NHLD or NHLDD; "aa" can be 60, 72, 120 or 144; and "b" can be M or P |

### FRAMELESS MODULE LIST

<table>
<thead>
<tr>
<th>MAKE</th>
<th>MODELS</th>
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</table>
| Astronergy Solar | Astronergy frameless modules  
CHSM6610P(DG)-xxx |
| Canadian Solar | Canadian Solar frameless modules  
C$\mathrm{S}$$\mathrm{b}$y-xxx-Z  
Where "b" can be 3 or 6; "Y" is K, P, U, or X; and "Z" can be M-FG, MS-FG, P-FG, MB-FG, or PB-FG |
| Jinko | Jinko frameless modules  
JKM$\mathrm{m}$xxPP-DV |
| Prism Solar | Prism Solar frameless modules  
BiYY-xxxBSTC  
Where "YY" can be 48, 60, 60S, 72 or 72S |
| Risen | Risen frameless modules  
RSM$\mathrm{y}$y-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-xxxxA |
| 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), DEG14C.07(II), DEG14.40(II), PEG5, PEG5.07, PEG5.40, PEG5.47, PEG14, or PEG14.40 |