An Intro to SnapNrack RL

SnapNrack’s primary goal is to provide our customers with the lowest possible installed cost for mounting residential solar modules, without compromising the values the industry has come to expect: ease of use, quality, aesthetics, and safety. Designing with this goal in mind, we are proud to present the SnapNrack RL Solar Mounting System.

SnapNrack has created a rail less system that combines the great features and benefits that we are known for with our 100 system and the most up to date technical innovation in the industry, in order to reduce parts and tools while driving down labor, material and total installation costs. Designed to work with standard module frames, achieving UL 2703 Listing for Grounding/Bonding and Fire Classification, providing integrated wire management, aesthetics and our industry leading “Snap-In” features, RL aims to provide the easiest and most cost effective solar mounting solution on the market.

Benefits of Installing the SnapNrack RL System

Install With Very Few Parts
Eliminates Rails and any piece over 14” in length. This elimination of parts leads to a lower estimated system cost for both the installer and home owner.

Install With Very Few Tools
All RL hardware is attached using a standard 1/2” socket

Built in Wire Management and Aesthetics
Extensive wire management solutions have been designed specifically for the system that adapts to multiple possible mounting positions.

The system is designed to be aesthetically pleasing on its own, so it does not require an aesthetic skirt. SnapNrack does offer an optional skirt for those looking for a high end look to the system.
Certification Details

SnapNrack RL system has been evaluated by Underwriters Laboratories (UL) and Listed to UL Standard 2703 for Grounding/Bonding, Fire Classification.

Grounding/Bonding

All RL components evaluated for integrated grounding are identified in the Component Details section with a UL label. Additional RL components are not included in the UL 2703 Listing for grounding/bonding because they are not part of the fault current ground path. The RL system has been designed in compliance with UL Standard 2703 Section 9.1 Exception, which permits accessible components that are not part of the fault current ground path to not be electrically bonded to the mounting system. For more details on the integrated grounding functionality see the Grounding/Bonding Specifications section.

This mounting 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. See Appendix A for the list of modules tested with the RL system for integrated grounding.

Ground Lug has been evaluated to both UL 467 and UL 2703 Listing requirements.

The following components have been evaluated for bonding as the fault current ground path: A Mount clamp, B Mount clamp, C Link, and Ground Lug part no. 242-92202. In order to maintain the Listing for bonding, wire management clips must be assembled according to the Module Installation instructions in the manual.

The RL system has been listed with the following Enphase microinverter models for grounding/bonding: M215, M250 and C250. The Enphase microinverters are certified to be mounted to the module frame with the Enphase Frame Mount. When installing the Enphase microinverters per the specifications in the MLPE Installation section of this manual, the total roof-mounted PV system is bonded (modules, racking and microinverters) and grounded through the Enphase ground circuit when the Enphase units are properly grounded through to the service entrance. Therefore, no ground lugs or equipment grounding conductor (EGC) are required on the SnapNrack system.

The RL system has been Listed with the following SolarEdge optimizer models for grounding/bonding: P300 and P350. The SolarEdge optimizers are certified to be mounted to the module frame with the SolarEdge Power Optimizer Frame-Mounted Module Add-On. When installing the Enphase microinverters per the specifications in the MLPE Installation section of this manual, the system is bonded to the optimizer backing plate.

Fire

The RL system has a Class A System Fire Classification Rating when installed with Type 1 and Type 2 modules over a fire resistant roof covering rated for the application. The Fire Rating is only valid for steep-slope applications where the roof pitch is greater than 1:12. Because the system was tested at 5 inches above the test roof fixture RL can be installed without any height restrictions due to System Fire Classification. See Appendix A for potential module-specific height restrictions due to module temperature.

The following RL components have been evaluated for System Fire Classification: A Mount, B Mount, Ridge Mount, Composition Flash Track Kit. The Skirt is considered an optional component.

SnapNrack recommends a periodic re-inspection of the completed installation for loose components, loose fasteners, and any corrosion, such that if found, the affected components are to be immediately replaced.

Wind-Driven Rain Test

The following components have been installed on asphalt shingles and tested for roof penetration of water utilizing the Wind-Driven Rain Test from UL Subject 2582: Composition flashing, Flash Track PRC, Flash Track End Caps, Umbrella Bolt.
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Component Details

RL Structural Components

**Umbrella Lag**
SnapNrack Umbrella Lag

**Composition Flash Track**
SnapNrack RL Composition Flash Track

**Composition Flashing**
SnapNrack Composition Flash Track Flashing

**A Mount**
SnapNrack RL A Mount assembly including D Tower, drop in/rock in channel nut and A Mount sleeve

**B Mount**
SnapNrack RL B Mount assembly including D Tower, drop in/rock in channel nut and B Mount top

**C Link**
SnapNrack RL C Link assembly including C Link, C Link clamp and spring

**Ridge Mount**
SnapNrack RL Ridge Mount assembly including H Track, H Track Leveler, drop in/rock in channel nuts and B Mount top

**Flash Track Spacer**
SnapNrack RL Flash Track Spacer assembly including Flash Track Spacer and channel nut

**Mount Sleeve**
SnapNrack RL Mount Sleeve component used when only one side of a B Mount clamps onto a C Link.
Component Details

RL Structural Components

Row Link
SnapNrack RL Row Link assembly (assembled from B Mount components), drop in/rock in channel nut, and B Mount top

Wire Management Components

Smart Clip I
Module frame cable clip, holds one PV wire or Enphase IQ-Cable

Smart Clip II
Module frame cable clip, holds two PV wires or one Enphase IQ-Cables

Grounding/MLPE Components

Wire Saver
Designed to secure conductors that become loose and hang below the array, holds one conductor

RL Ground Lug
RL Ground Lug including lug, wire attachment bolt and lug attachment bolt

MLPE Frame Attachment Kit
Attaches MLPEs (Module Level Performance Enhancers) and other related equipment to the module frame

Aesthetic Components

Array Skirt
Skirt kit including skirt, attachment hardware and end caps
## Component Details

### Hardware Torque Specifications

<table>
<thead>
<tr>
<th>Hardware Description</th>
<th>Torque Specification</th>
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<td>B-Mount, Row Link, and Ridge Mount Top Down Clamp for Canadian Solar, LG, REC and Trina modules</td>
<td>12 ft-lb</td>
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<td>C-Link Clamp</td>
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<tr>
<td>SnapNrack Ground Lug model 242-92202 to Module Frame Flange, B-Mount Tower and 6-10 AWG Solid Grounding Electrode Conductor</td>
<td>8 ft-lb</td>
</tr>
<tr>
<td>SnapNrack MLPE Frame Attachment Kit</td>
<td>10 lb-ft</td>
</tr>
<tr>
<td>Ilsco Ground Lug model SGB-4 to B-Mount Tower or Module Frame Flange</td>
<td>75 in-lb</td>
</tr>
<tr>
<td>Ilsco Ground Lug model SGB-4 to 4-14 AWG Solid or Stranded Grounding Electrode Conductor</td>
<td>35 in-lb</td>
</tr>
<tr>
<td>Ilsco Ground Lug model GBL-4DBT to Module Frame Flange</td>
<td>35 in-lb</td>
</tr>
<tr>
<td>Ilsco Ground Lug model GBL-4DBT to 10-14 AWG Solid or Stranded Grounding Electrode Conductor</td>
<td>20 in-lb</td>
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<td>Ilsco Ground Lug model GBL-4DBT to 8 AWG Solid or Stranded Grounding Electrode Conductor</td>
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<tr>
<td>Ilsco Ground Lug model GBL-4DBT to 4-6 AWG Solid or Stranded Grounding Electrode Conductor</td>
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</tr>
<tr>
<td>SolarEdge Frame Mounted Bracket to Module Frame</td>
<td>11 ft-lbs</td>
</tr>
<tr>
<td>Enphase Frame Mounted Bracket to Module Frame</td>
<td>13 ft-lbs</td>
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Site Survey

- Measure the roof surfaces and develop an accurate drawing, including any obstacles such as chimneys and roof vents.
- If plans for the roof structure are available, verify that the plans match the final structure.
- Identify any roof access or setback areas as required by the local AHJ.
- Identify any construction issues that may complicate the process of locating rafters from the roof surface.
- If you find structural problems such as termite damage or cracked rafters that may compromise the structure’s integrity consult a structural engineer.

Design Guidance

- PV Designers should account for the 0.75 inch spacing between rows and 1.0 inch spacing between columns of modules when creating the layout.
- Ridge Mounts are required if modules will be installed with the top edge of the modules less than 12 inches from the ridge peak.
- Draw the rafter location on the layout to identify where roof attachments can be installed.
- Determine site conditions for calculating the engineering values, confirm site conditions and code versions comply with local AHJ requirements.
- Reference site conditions and system specifications in RL Structural Engineering Report to determine maximum span and cantilever values.
- Draw roof attachment locations on layout based on maximum span and cantilever values.

**Design Recommendation:**
Four roof attachments per module are recommended for at least one module per row to provide rigidity in the array.

- Staggering rows of attachments on alternating rafters is acceptable, and may provide more evenly distributed loads on the roof structure.
- Identify homerun and Junction Box locations based on roof top wiring requirements.
- Mark distance from array edge to identifiable roof feature in x and y axes.
- Mark distance from array edge to identifiable roof feature in x and y axes.
- Insert SnapNrack installation details into design plan set specific to the project requirements.

Safety Guidance

- Always wear appropriate OSHA approved safety equipment when at active construction site.
- Appropriate fall protection or prevention gear should be used. Always use extreme caution when near the edge of a roof.
- Use appropriate ladder safety equipment when accessing the roof from ground level.
- Safety equipment should be checked periodically for wear and quality issues.
- Always wear proper eye protection when required.
System Layout

Required Tools

- Roof Marking Crayon or Chalk
- Tape Measure
- Prybar

LAYOUT INSTRUCTIONS

1) Transfer the layout to the roof using marking crayon or chalk and identify the outside corners of the array. Draw attachment locations on the roof positioned in the x-axis to land on a rafter and in the y-axis to land between modules rows.

Layout Note: Ensure the final roof attachment locations do not exceed the maximum span and cantilever specified in the design plan.
Composition Shingle Roof Attachment

Required Tools
- Hammer or Stud Finder
- Roof Marking Crayon or Chalk
- Drill with 3/16" Drill Bit
- Roof Sealant
- Socket Wrench
- Torque Wrench
- 1/2" Socket

Materials Included
1. (1) SnapNrack Composition Flashing
2. (1) SnapNrack Flash Track
3. (1) SnapNrack 5/16" SS Umbrella Lag Screw
4. (1) 12" x 12" RL Flashing (An acceptable substitution for the Composition Flashing)

12" x 12" RL Flashing
1) Using a Flash Track as a template, drill a pilot hole into the rafter with 3/16” drill bit.

2) Apply roofing manufacturer’s approved sealant to lag screw, apply sealant in a circle around pilot hole and fill pilot hole with sealant.

3) Install flashing underneath shingle course directly above pilot hole, align hole in flashing with pilot hole.

4) Place Flash Track over hole in flashing, drive Umbrella Lag through hole in Flash Track, flashing, and into pilot hole for minimum 2.5” embedment in rafter.

Installation Note:
Composition Flashings should be installed in the nominal position; Marks on flashing edge flush with overlapping composition leading edge. It is acceptable to install the flashing with leading edge of flashing 1-1/4” above the leading edge of first course of composition, or flush with the leading edge of the first course of composition.

Install Note:
Ensure flashing extends minimum (2) courses above base.

Best Practice: Apply a U-shape of sealant on top portion of flashing underside.
Required Tools

- Socket Wrench
- Torque Wrench
- 1/2" Socket

Materials Included - RL Mount

1. (1) SnapNrack A Mount
2. (1) SnapNrack B Mount
3. (1) SnapNrack Ridge Mount

INSTALLATION INSTRUCTIONS

1) Rock channel nut(s) on bottom of RL Mount into Flash Track. Both channel nuts on the Ridge Mount must be engaged in the Flash Track.

2) Partially tighten tower bolt to Flash Track.
3) RL Mounts must be seated entirely on either a module or a C Link. This can be achieved by positioning the mounts left or right of the Flash Track depending on rafter location and array layout.

4) A Mounts are used on the lower edges of an array near the eaves.

5) B Mounts are used on the interior of the array between two adjacent modules (or module rows) and at the top of the array near the ridge.

6) If modules will be installed within 12 inches of the roof ridge, then RL Ridge Mounts will be required.
Aligning & Leveling RL Mounts

Required Tools
- Socket Wrench
- Torque Wrench
- 1/2" Socket
- String Line

INSTALLATION INSTRUCTIONS

1) Slide the bottom two corner A Mounts up or down in the Flash Track until aligned with the bottom edge of array as marked on the roof, then tighten the D Tower bolt.

2) To set the RL Mount level loosen the Leveler bolt and move the Leveler up or down, then tighten the Leveler bolt and torque to 12 ft-lb.

3) Run string line along bottom row to set the rest of the RL A Mounts level and square.

4) With bottom row level and square, set top row B Mounts level with string line, and level interior B Mounts between top and bottom rows.

5) Insert a Flash Track Spacer under an A Mount or B Mount When additional leveling is required beyond the 1-1/2 inches of standard leveling. Flash Track Spacers provide an additional 1-1/4 inches of leveling.

Install Note:
Use tick marks on the vertical face of the RL Mount Tower Leveler for a leveling guide, and use string line catch feature on A Mounts to hold string line in place and align the A Mounts.

Efficiency Note:
Due to the shared mount feature of the B Mounts one installer can typically sight in the mounts looking up the roof while another installer secures the Levelers.
Wire Management

Required Tools

- Socket Wrench
- Torque Wrench
- 1/2” Socket
- Electrician Tools

Materials Included

**RL Ground Lug**

1. (1) SnapNrack RL Ground Lug
2. (2) 5/16”-18 X 3/4” SS HCS Bolt

**Smart Clips**

1. (1) Smart Clip I ((1) PV Wire)
2. (1) Smart Clip II ((2) PV Wire, (1) Enphase IQ)
3. (1) Wire Saver ((1) PV Wire)
The RL Ground Lug to be used in accordance with the National Electric Code, ANSI/NFPA 70.

1A) Ground Lug can be attached to the Tower of any B Mount near the Junction Box. Press Ground Lug through the knock out in the plastic cap until the attachment bolt contacts the outer Tower surface. Torque attachment bolt on Ground Lug to 8 ft-lb.

1B) Ground Lug can be attached to any module listed in Appendix A. Seat the clamping side of the Ground Lug and tighten the attachment bolt to 8 ft-lb.

2) Run 10 – 6 AWG, 75°C, solid, bare copper EGC into Ground Lug channel, torque clamping bolt to 8 ft-lb.

3) Run bare, solid EGC from Ground Lug to Junction Box, bond bare EGC to stranded EGC in Junction Box. For details on installing the Junction Box reference the RL Junction Box Installation Manual.
Route all conductors away from A Mounts and B Mount Bases and Flashings. SmartClips should be used to keep conductors routed away from non-bonded components.

1A) For central inverter and DC to DC MLPE systems: Identify where PV string poles are located, use SnapNrack Smart Clips to manage conductors in route from far pole to the Junction Box.

Install Note:
Use Smart Clips to manage PV module leads connected to the MLPE

1B) For microinverter systems: Identify route from furthest microinverter to Junction Box, use Smart Clips to manage AC trunk cables and multiple PV wires.
MLPE Installation

Required Tools

- Socket Wrench
- Torque Wrench
- 1/2” Socket

Materials Included - MLPE Rail Attachment Kit

1. (1) SnapNrack MLPE Frame Attachment Top
2. (1) SnapNrack MLPE Frame Attachment Bottom
3. (1) 5/16”-18 X 3/4” Serrated Flange Bolt SS
4. (1) SnapNrack Smart Clip II
5. (1) SnapNrack MLPE Frame Attachment Coil Spring SS

Materials Included

SolarEdge Frame Mount

1. (1) SolarEdge Optimizer w/ Frame-Mounted Module Add-On

Enphase Frame Mount

1. (1) Enphase Microinverter
2. (1) Enphase Frame Mount
1) Slide the backplate channel of the MLPE device under the MLPE Frame Attachment Kit bolt. The MLPE mounting plate should rest against the MLPE mounting plate backstop on the MLPE Frame Attachment Kit.

2) Position the MLPE Frame Attachment Kit on the module frame flange in a location that will not interfere with mounting system components. The module frame flange should rest against the module flange backstop on the MLPE Frame Attachment Kit.

3) Tighten the mounting bolt on the MLPE Frame Attachment Kit to 10 lb-ft (120 lb-in).

Install Note:
The MLPE Frame Attachment Kit bonds the following components: Module Frame, MLPE backplate and Smart Clip.

Install Note:
Avoid blocking module frame drainage holes when installing the MLPE Frame Attachment Kit.

4) Connect the module leads to the input connectors on the MLPE device and manage conductors with the integrated Smart Clip.

<table>
<thead>
<tr>
<th>Hardware Description</th>
<th>Torque Specification (lb-ft)</th>
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<tbody>
<tr>
<td>MLPE Frame Attachment Bolt</td>
<td>10 lb-ft (120 lb-in)</td>
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<table>
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<td>Certified with MLPE Models</td>
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<tr>
<td>Certified with Module Models</td>
</tr>
</tbody>
</table>
**MLPE Installation**

**INSTALLATION INSTRUCTIONS - SOLAREDGE FRAME MOUNT**

1) Locate the SolarEdge optimizer with Frame-Mounted Module Add-On at a location on the module frame that will not interfere with the RL Mounts.

2) Install the optimizer mounting plate onto the module frame and tighten hardware to 11 ft-lbs.

3) Connect the module leads to the input connectors on the optimizer and manage conductors with SnapNrack Smart Clips.

**Install Note:**
If module is mounted in portrait, install MLPE on long side, short side for landscape.

**INSTALLATION INSTRUCTIONS - ENPHASE FRAME MOUNT**

1) Locate the Enphase Frame Mount bracket clamp at a location on the module frame that will not interfere with the RL Mounts.

2) Slide the microinverter unit onto the bracket clamp, then move it slightly to the left.

3) Tighten the hardware to 13 ft-lbs.

**Install Note:**
The microinverter mounting flange should be on the outside of the module frame.

**Install Note:**
Refer to the Enphase Frame Mount installation guide for additional instructions.
Module Installation

Required Tools
- Socket Wrench
- Torque Wrench
- 1/2" Socket

Materials Included
1. SnapNrack C Link (module manufacturer specific)

Other Materials Required
2. SnapNrack Smart Clip (2-4 per Module)
   See Wire Management section for details

INSTALLATION INSTRUCTIONS - BOTTOM ROW

1) With bottom row of A Mounts level and square, rest downslope edge of module on the RL A Mount sleeve, position module so side edge is flush with marked edge of array.

2) Lower upslope edge of the module while simultaneously applying slight pressure to seat the module into the A Mount sleeve.

3) When module is level with roof slide the B Mount down the Flash Track and engage B Mount clamp on upslope edge of module.

Install Note:
Secure module leads to module frame to allow access to connectors while subsequent modules are installed.

Secure MLPE device to module frame with attachment mount and connect dual module leads to MLPE.

4) With the B Mount fully engaged on the module frame first tighten Tower bolt, then tighten B Mount clamp bolt.
5) Attach C Link to bottom corner of installed module, rotate clamp so C Link clamps onto installed module, tighten clamp bolt.

6) Install next module in row by placing the downslope edge of module onto the C Link attached to previously installed module and next A Mount in the row then lower upslope edge of module until level with roof.

7) Slide the B Mount down the Flash Track and position the module on the B Mount.

8) Attach C Link to upslope side of modules by rotating clamp to engage both modules.

Install Note:
Push modules together so they are tight against the C Link module spacer.

9) Engage B Mounts on the module frame and tighten Tower bolt, then tighten B Mount clamp bolt.

10) Repeat steps 5-7 for additional modules in a bottom row.
1) With the first row installed lower the leading edge of the first module of the next row into the sleeve side of the B Mount.

2) Lower upslope edge of the module while simultaneously applying downward pressure to drive the module into the B Mount sleeve.

3) When module is level with roof engage B Mount clamp on upslope edge of module, tighten tower bolt (1), then tighten the B Mount clamp bolt (2).

4) Attach C Link to bottom corner of installed module, rotate clamp so C Link clamps onto installed module, tighten clamp bolt.

5) Install next module in row by lowering the downslope edge of module onto the C Link attached to previously installed module and next B Mount in the row.

6) Lower upslope edge of module while simultaneously applying downward pressure on module to drive module into the C Link and B Mount sleeves.

7) Attach C Link to upslope side of modules by rotating C Link clamp to engage both modules.

8) Engage B Mount clamp on upslope edge of module, tighten tower bolt (1), then tighten the B Mount clamp bolt (2).

9) Repeat steps 1-8 for each additional module in a row.

Install Note:
Push modules together so they are tight against the C Link module spacer.
1) If an A Mount is positioned where a C Link joins two modules, remove aluminum sleeve from A Mount and insert a C Link.

Install Note:
If an A Mount sleeve is removed save the sleeve for later use. The sleeve may be re-quired if an uppermost B Mount is engaging the modules at a C Link.

2) If B mounts are positioned where C Links join two modules:

1. Remove the gray plastic spacer from B Mounts,
2. Position the B Mount clamp on the module, and
3. Tighten the tower bolt only, do not tighten the B Mount clamp bolt.

Install Note:
All RL Mounts are bidirectional and can be flipped 180° on the Flash Track to minimize RL Mount and C Link interference, and maximize installation efficiency.

3) As the next module in a column of modules where there is B Mount and C Link interference is being installed, attach a C Link to the module being installed first then lower the module into the untightened B Mount sleeve.

4) After lowering the module into position with the attached C Link tighten the lower B Mount clamp and position all upslope B Mounts with clamp facing the module. Tighten all tower bolts, but only tighten B Mount clamps with no C Link interference.

5) When a B Mount is clamped onto a Clink, but there is no C Link at the same location on the adjacent row, a Mount Sleeve will need to be added to provide equal clamping heights on both sides of the B Mount.

6) If Modules will be installed in a staggered condition installing Row Links may simplify the installation by reducing the number of required roof attachments. Assemble a Row Link by removing the clamping top and channel nut from a B Mount and threading the channel nut upside down onto the clamping bolt.
Module Installation

INSTALLATION INSTRUCTIONS - RL MOUNT & C LINK INTERFERENCE & STAGGERED ROWS CONTINUED

7) Attach row links to the adjacent row of modules between two roof attachments before the staggered row is installed.

8) As the staggered module is installed the end of the module must be no more than 6” from the Row Link.

SnapNrack RL Ridge Mount Installation

INSTALLATION INSTRUCTIONS

1) Rock channel nuts on bottom of Ridge Mount Mount into Flash Track and partially tighten both channel nuts in the Flash Track. Both channel nuts on the Ridge Mount must be engaged in the Flash Track.

2) Loosen the flange nut on the H Track Leveler so the clamp and leveler can slide in the H Track.

3) As the module is lowered into place slide the H Track Leveler and clamp assembly down the H Track to engage the module frame.

4) Once the clamp is seated on the module, first tighten the H Track Leveler nut then tighten the clamping bolt.
1) Before attaching the Cantilever Deck Mount to the roof decking, align the Flash Track with the module so A Mounts and B Mounts will be approximately centered on the Flash Track when clamped or sleeved to the module. A one inch (1”) variance up or down the Flash Track from center is acceptable.

2) Attach the flashing and Flash Track to the roof decking using a 5/16” x 2” lag screw. If loading conditions require two columns of Cantilever Deck Mounts it is acceptable to overlap the flashings with a minimum 5-1/2” between holes.

Install Note:
If roofing is presidential composition, use 5/16” x 2-1/2” lag screws.

3) For a single column of Cantilever Deck Mounts attach the mount between the center of the cantilever and the end of the module making sure the distance from the mount to the end of the module is less than the maximum allowable cantilever.

4) With two columns of Cantilever Deck Mounts attach the mounts at approximately 1/3 intervals making sure the distance from the outside mount to the end of the module is less than the maximum allowable cantilever.
GROUND PATH DETAILS

All RL components in the fault current ground path have been Certified to be used multiple times for grounding/bonding. The UL 2703 Listing does not specify a maximum number of uses for the A Mount, B Mount, C Link, or Ground Lug. Review the requirements of National Electrical Code (NEC) Article 250 to select the appropriate Equipment Grounding Conductor size based on the short-circuit current of the PV system.

When using the RL ground Lug the following components are part of the fault current ground path:

- SNAPNRACK, D TOWER LEVELER
- SNAPNRACK, D TOWER PRC
- SNAPNRACK, B MOUNT TOP (40mm, 38mm, 32mm, and 30mm)
- SNAPNRACK, B MOUNT BONDING CLIP

GROUNDING METHOD DETAILS

1) Row to row module bonding provided by bonding clip in B Mount assembly

2) Column to column bonding provided by bonding clamp in C Link assembly
Module heights evaluated for bonding with C Link Bonding Clamps:
- 40 mm (Canadian, LG), 232-01740
- 38 mm (REC), 232-01738
- 35 mm (Trina), 232-01735
- 32 mm (Hanwha), 232-01732

3) Each continuous array is connected to Equipment Grounding Conductor through Ground Lug installed on one D Tower per array
Grounding Specifications

Grounding Marking Details

Array fault current ground path components are marked with the UL logo, SnapNrack File E359313 and “PV Mounting System”

The RL Ground Lug is marked with the ground symbol. Ilsco Ground Lugs have green colored set screws or bolts to indicate connection to the grounding electrode conductor.
Appendix A

APPROVED MODULE INFORMATION

The following modules have completed the UL 2703 Listing process and have been approved for use with the RL mounting system by the module manufacturer. Module manufacturer approval letters can be found at www.snapnrack.com.

RL has been evaluated for frame-to-system bonding at specific mounting torques and with the specific modules listed below. The system has been assessed to a maximum Over-Current Device (OCD) protection level of 20 amps.

MODULES

UL Listed - REC Group - RECXXXPE or RECXXXPE-BLK Series where XXX is 214 to 280; RECXXXTP or RECXXXTP-BLK Series, where XXX is 260 to 300; RECXXXTP2 or RECXXXTP2-BLK Series where XXX is 260 to 300.

NRTL Listed - Canadian Solar - CS6K-XXX-M where XXX is 240 to 305; CS6K-XXX-M-SD where XXX is 240 to 305; CS6K-XXX-P where XXX is 220 to 285; CS6K-XXX-P-SD where XXX is 220 to 285; CS3K-XXX-P where XXX is 250 to 310; CS3K-XXX-MS where XXX is 280 to 330; CS1K-XXX-MS where XXX is 285 to 345.

NRTL Listed - Hanwha - Q.PRO BFR-G4-XXX where XXX is 205 to 295; Q.PRO BFR-G4.1-XXX where XXX is 245 to 295; Q.PLUS BFR-G4-XXX where XXX is 255 to 265; Q.PLUS BFR-G4.1-XXX where XXX is 270 to 280; Q.PEAK BFR-G4.1-XXX where XXX is 290 to 305; Q.PEAK BFR-G4.1-XXX where XXX is 285 to 295.

NRTL Listed - LG - Models LGXXXS1C-G4 where XXX is 250 to 300; LGXXXN1K-G4 where XXX is 280 to 300; LGXXXN1C-G4 where XXX is 280 to 340; LGXXXN2C-G4 or LGXXXN2W-G4, where XXX is 360 to 395; LGXXXN2K-G4, where XXX is 360 to 385; LGXXXS2C-G4 or LGXXXS2W-G4, where XXX is 300 to 360; LGXXXS1C-A5 where XXX is 280 to 320; LGXXXN1C-A5 where XXX is 320 to 345; LGXXXN1K-A5 where XXX is 310 to 335.

NRTL UL Listed - LGXXXQ1C-A5 where XXX is 340 to 385; LGXXXQ1K-A5 where XXX is 315 to 375.

NRTL Listed - Longi Green Energy Technology Co., Ltd. - LR6-60-XXXM, LR6-60BKK-XXXM, LR60-HV-XXXM, where XXX is 270 to 300; LR6-60BP-XXXM, LR6-60PE-XXXM, LR6-60PH-XXXM, where XXX is 280 to 310.

NRTL Listed - Mission Solar - Models MSEXXXSQ5ST where XXX is 260 to 290; MSEXXXSQ50K where XXX is 270 to 290; MSEXXXSQ5ST where XXX is 280 to 300; MSEXXXSQ5K where XXX is 285 to 305.

UL Listed - Panasonic - VBHNXXXKA03 and VBHNXXXKA04 where XXX is 310 to 325; VBHNXXXSA17 and VBHNXXXSA18 where XXX is 325 to 335.

NRTL Listed - Trina Solar - Models TSM-XXXPD05.002 or TSM-XXXPD05.082 where XXX is 215 to 275; TSM-XXXDD05A.082(II) where XXX is 260 to 315; TSM-XXXPD05.08S and TSM-XXXPD05.05S where XXX is 215 to 275; all may be followed by Black.

UL Listed - Trina Solar - TSM-XXXPA05 where XXX is 215 to 260; TSM-XXXPA05.05 where XXX is 215 to 260; TSM-XXXPA05.08 where XXX is 215 to 260; TSM-XXXPD05 where XXX is 240 to 280; TSM-XXXPD05.05 where XXX is 240 to 280; TSM-XXXPD05.08 where XXX is 240 to 280; TSM-XXXPD05.08D where XXX is 245 to 275; TSM-XXXDD05A(II) where XXX is 260 to 300; TSM-XXXDD05A.08(II), TSM-XXXDD05A.05(II) where XXX is 260 to 300. All may be followed by Black or White.