

# HRS1600 INSTALLATION MANUAL v1.9

## HYBRID RACKING SYSTEM

**QAI**<sup>®</sup>  
US  
E10758



# Introduction

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## Short Description

The HRS160 is an innovative hybrid racking system designed for the installation of PV modules onto flat or pitched roof applications. Its aluminum support rails include all the necessary components to mount PV Modules to a mounting location. The unique design allows mounting PV modules in both portrait and landscape configurations. The system design also allows installing PV modules in a shared rail configuration in both portrait or landscape.

## Certification

The HRS160 Racking System is PE and UL Certified.

2012 International Building Code (IBC)  
Referencing the 2010 Minimum Design Loads for Buildings and Other Structures by the American Society of Civil Engineers (ASCE 7-10) including all supplements and errata.  
UL2703, UL1703 and UL467

UL standard 2703 (1st Edition): Standard for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.  
UL Listing is for grounding/Bonding only.

This racking system may be used to ground and/or mount a PV module complying with UL1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions

## Warning

It is important that you carefully read these Instructions as well as all applicable documents prior to carrying out any installation, maintenance or disassembly work.

This manual provides you with the information required for the safe and complete installation, maintenance and disassembly. Should you have any questions, please contact Solar SpeedRack® Inc.

## Installer Responsibilities

The installer is solely responsible for:

- Complying with all applicable local or national building and electrical codes, which may supersede this manual.
- Ensuring that Solar SpeedMount and other products are appropriate for the particular installation and the installation environment.
- Ensuring that all structural support members, including the roof, its rafters, and connections, can support the array under all code level loading conditions.
- Using only Solar SpeedRack® Inc. parts and compatible third party parts are recommended (substitution of parts may void the warranty and invalidate the letters of certification in all publications).
- Ensuring that anchoring devices, including lag screws, have adequate pullout strength and shear capacities as installed.
- Ensuring that PV module is UL listed and verification of PV Module's capacity to support the loads associated with the given array; Maintaining the waterproof integrity of the roof, including selection of appropriate third party flashing. Please refer to the CALSEIA compliance database for reference: <http://calseia.org/ul-1703-compliance-database/>
- Ensuring that correct and appropriate design parameters are used in determining the design load of the installation.
- Parameters such as snow load, seismic load, wind speed, exposure and topographic factors should be confirmed with the local building official or a licensed professional engineer.
- All electrical installation and procedures should be conducted by skilled, licensed and bonded electrician. All work must comply with all national, state and local installation procedures, product and safety standards. These standards include but are not limited to applicable National Electrical Code (NEC®), National Electrical Installation Standards (NEIS™), UL Standards, and OSHA Regulations.
- In accordance with UL2703 it is the installers responsibility to conduct routine inspections for system wear, rust, and overall aspects of the components and installation. It is required by UL2703 to periodically check installation for loose components, loose fasteners and any corrosion, such that if found the affected components are to be immediately replaced. It is the installers responsibility to ensure Fasteners stay within the Torque specifications in accordance with this manual.

## Recommended Tools

Solar SpeedRack® Inc. Recommends the following tools



Standard Tape Measure



Chalk and Chalk Line



Impact Driver and Torque Wrench (Analogue or Digital) 2-25 ft-lbs. Range



Sockets;  
1/2" Deep Socket  
3/8" Shallow Socket

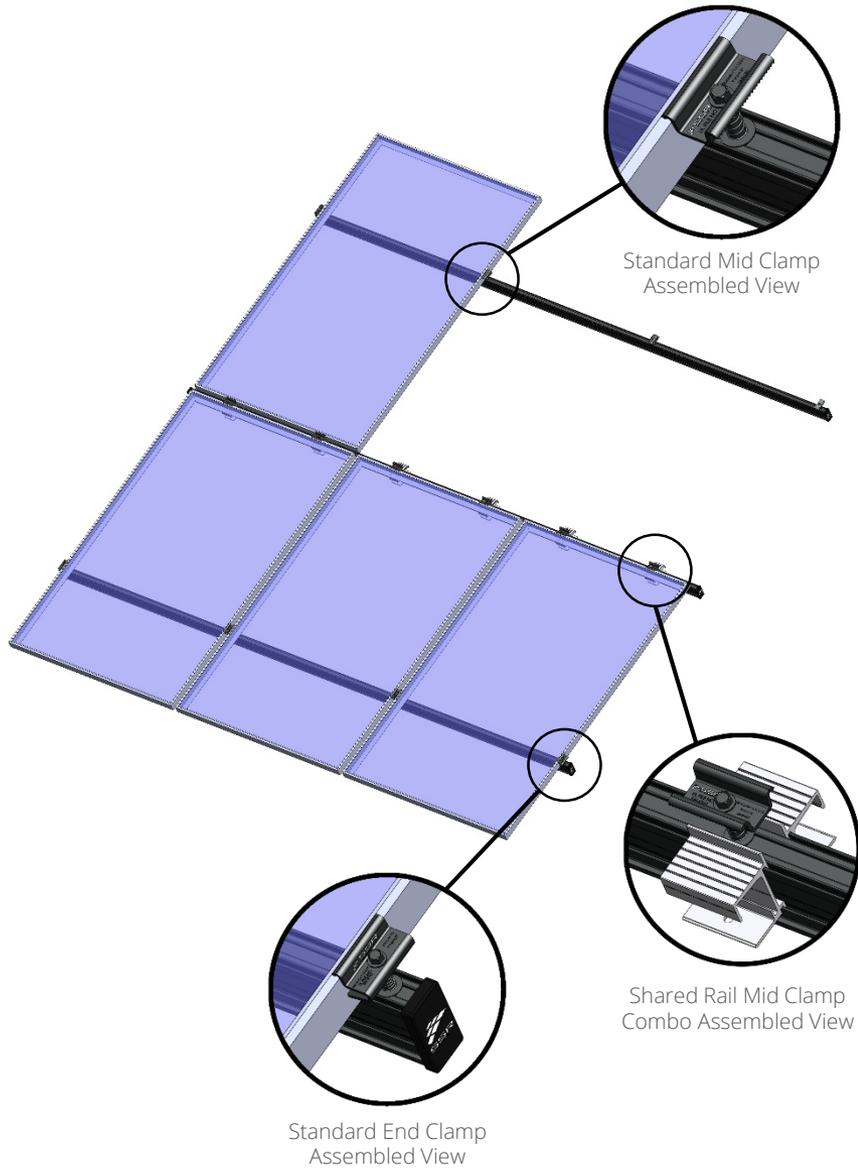


Miter saw with non ferrous blade (Sawz-all or similar saw type also applicable)

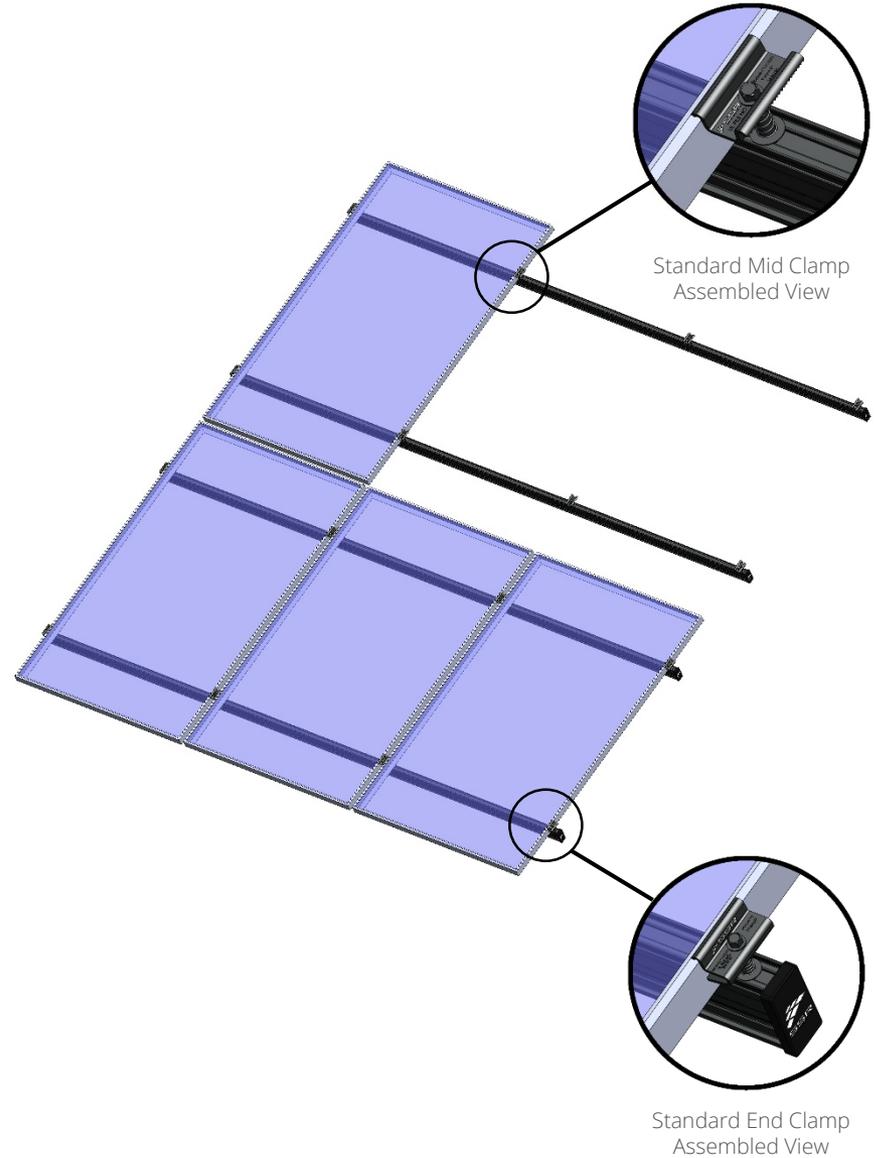
Note: Other tools may be required for installation as sites vary. The tools specified above are only recommendations and it is the installers responsibility to ensure adequate tools are chosen for installation.

# System Overview

## Overview of Racking – Shared Rail Configuration



## Overview of Racking – Standard Rail Configuration



# Components Overview



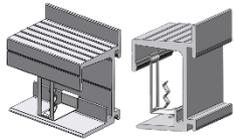
**HRS-A-EPG3-138**  
**BA** – Black Anodized  
**MF** – Mill Finish  
 6000 Series Aluminum  
 HRS Rail 138" (11'-6") Long



**HRS-ASM-MCG2.25**  
**BC** – Black  
**MF** – Mill Finish  
 Stainless Steel  
 HRS Mid Clamp Assembly  
 Torque Spec: 100 in-lbs  
 Socket Size: 3/8"



**HRS-ASM-ECG2.25**  
**BC** – Black  
**MF** – Mill Finish  
 Stainless Steel  
 HRS End Clamp Assembly  
 Torque Spec: 100 in-lbs  
 Socket Size: 3/8"



**HRS-ASM-BCLIP-WMV**  
 6000 Series Aluminum  
 HRS Rail Clip Support Bracket  
 Integrated Wire Management Kit

The HRS Rail Clip Support Bracket is designed to be compatible with most Third Party Wire Management Products.



Hellermann Tyton  
 P/N: [151-00927](#)



Hellermann Tyton  
 P/N: [151-00234](#)

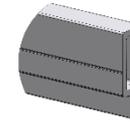


Hellermann Tyton  
 P/N: [156-00635](#)



Hellermann Tyton  
 P/N: [151-00982](#)

The Hellermann Tyton products shown above are SSR approved examples of compatible third party accessories. Installers are able to use other third party product based on their needs and jurisdictional requirements.



**HRS-A-SP2N10**  
 6000 Series Aluminum  
 HRS Splice Bar 10" Long  
 Mill Finish



**F-SS-S1414-0.625-XX-ST**  
**BC** – Black  
**MF** – Mill Finish  
 410 Stainless Steel  
 HRS 1/4" Tek Screw Mill Finish  
 Torque Spec: 140 in-lbs  
 Socket Size: 3/8"



**HRS-P-ECPF160**  
 ABS Plastic  
 HRS Rail End Cap Black  
 (Press-Fit to Install)



**SA-ASM-TBK**  
**BC** – Black  
**MF** – Mill Finish  
 304 Stainless Steel  
 SSR T-Bolt Assembled Kit  
 Torque Spec: 180 in-lbs  
 Socket Size: 1/2"



**SA-A-LFS1.9X3**  
**BC** – Black  
**MF** – Mill Finish  
 6000 Series Aluminum  
 Standard SSR L-Foot



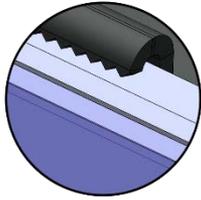
**SA-ASM-SQK01**  
**BA** – Black  
**MF** – Mill Finish  
 Solar SpeedFoot®  
 Non-Penetrating Mount



**SA-ASM-GSL160**  
 6000 Series Aluminum  
 SSR Ground Lug  
 Torque Spec: 35 in-lbs  
 Socket Size: 3/8"

## HRS160 Clamp Grounding and Bonding

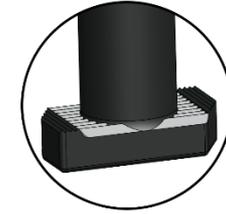
The information provided in this manual must always be verified with local and national building codes. It is the installers responsibility to ensure the appropriate means of bonding and grounding are installed by regulation.



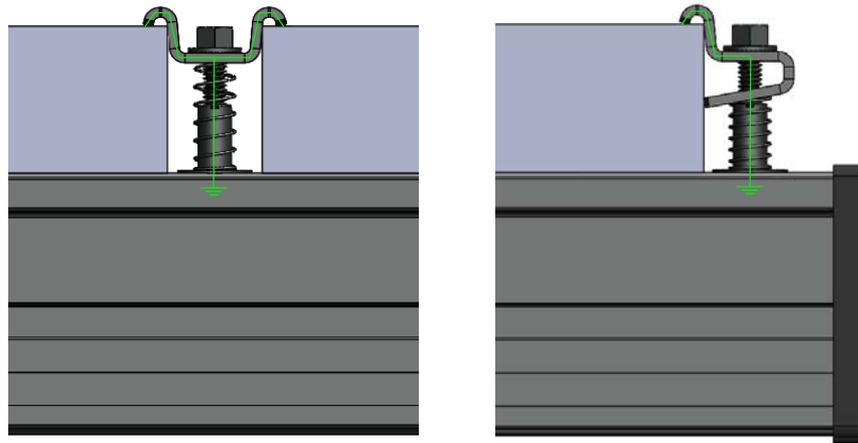
Serrated teeth on clamps pierce anodized coatings bonding module frame to clamp



Clamp fasteners have serrated flanges that bond to the clamp surface and travel down fastener



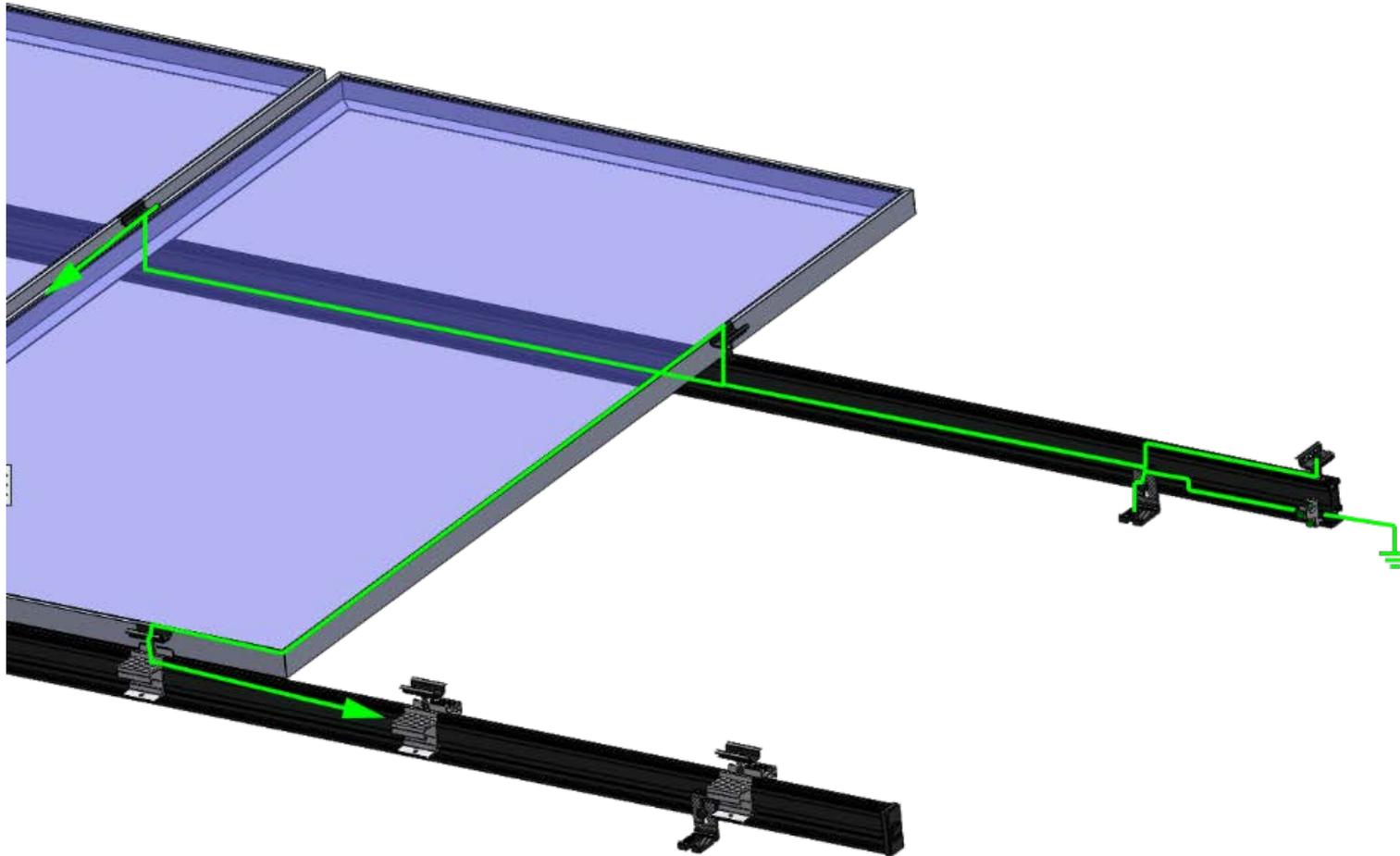
Serrated teeth on the T-Bolt pierce the anodized rail and bond the clamp assembly to the rail



Torque the End Clamp and Mid Clamp Bolts to 100 in-lbs. using a 3/8" Socket.  
Mid Clamps must always install on top of two PV Modules.

## HRS160 Grounding and Bonding

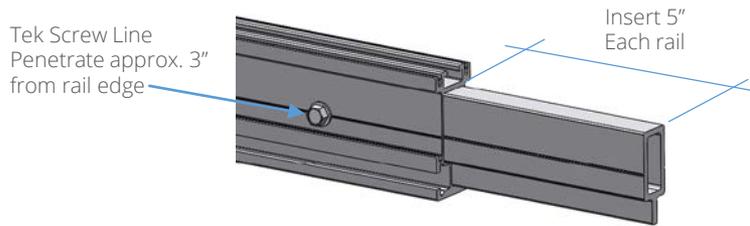
The information provided in this manual must always be verified with local and national building codes. It is the installers responsibility to ensure the appropriate means of bonding and grounding are installed by regulation.



The above illustration is an example of the bonding paths through the system and its components. Specific installations may vary and are dependent on site conditions and local jurisdictional code.

# HRS160 Grounding and Bonding

## Splicing the rails



The splice connection may be used at any point along the rail as the rail strength and maximum stresses allowed in the rail are based on the strength of the splice connection.

The internal splice works in bearing with the rail and is held in place using (2) 1/4" diameter self drilling, self-tapping TEK.

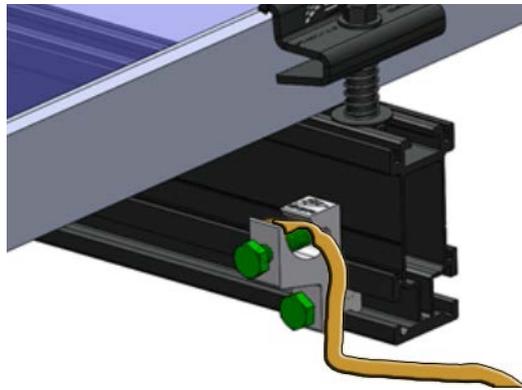
Insert the **HRS-A-SP2N10** HRS Splice Bar 10" Long into one rail halfway down the splice. Self Tap one **F-SS-S1414-0.625-XX-ST** 1/4" Tek Screw through the rail and splice bar to 140 in-lbs.

**\*Expansion Joints are required for thermal expansion for rows exceeding 100 feet of continuous rail.**

## Ground Lug

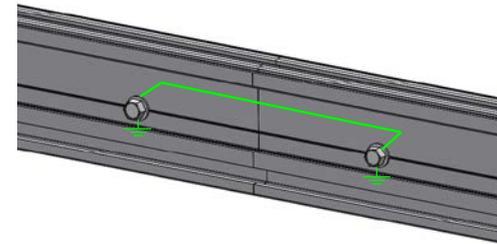
### For Grounding Connection

Ensure that copper wire does not touch aluminum; recommended 1/4" clearance.



Slide the **SA-ASM-GSL160** Ground Lug into the side channel of the rail and torque the rail bolt to 35 in-lbs. Install the ground wire into the serrated opening and secure in place with the wire bolt. Torque ground wire to 35 in-lbs. Per UL2703 a #6 or #8 AWG solid copper wire used must be in accordance with the National Electrical Code, ANSI/NFPA 70 and have a temperature rating between 75°C (167°F) to 110°C (230°F).

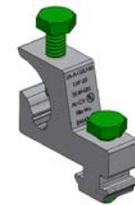
## Bonding the rails



Then slide the next rail over the rest of the internal splice bar and secure the second **F-SS-S1414-0.625-XX-ST** 1/4" Tek Screw through the rail and splice bar to 140 in-lbs. The bonding path rail to rail is made by the Tek Screws penetrating the rail and splice bars.

Please note the rail has an indication line on the location of the Tek Screws. It is critical that the Tek screws are fastened in this designated area. Failure to install the splice bar properly will void the system warranty and Solar SpeedRack Inc. is not liable for any damage or injury caused from improper installation.

**The HRS160 splice bar can be placed anywhere and rail segments require zero supports.**



**SA-A-GSL160**  
**1/4"-20**  
**35 IN-LBS**  
**AL-CU**   
**File No.**  
**E10758**

The HRS160 Racking System is required to be electrically bonded with **SA-ASM-GSL160** SSR Ground Lug and the use of either #6 or #8 AWG solid copper wire.

One Ground Lug is required for each array table since the components are fully grounded and bonded with each other.

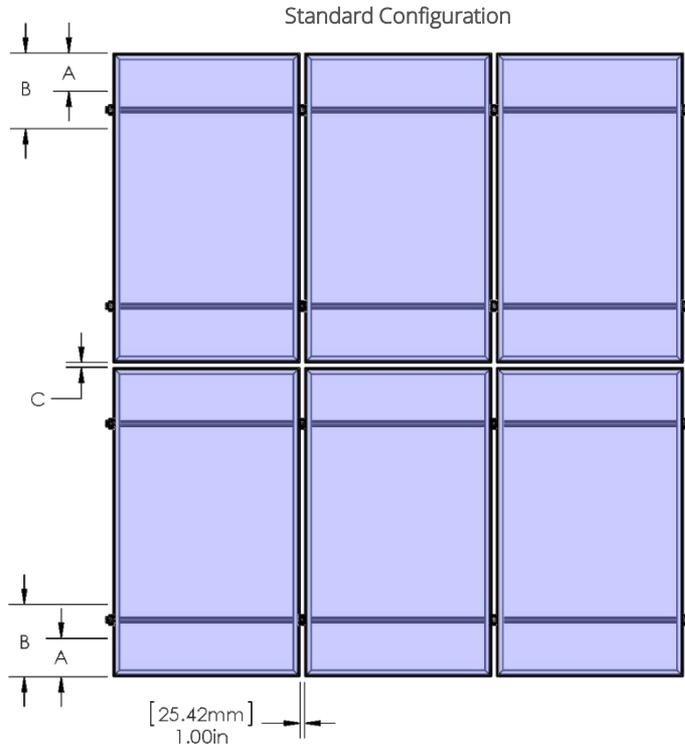
This Ground Lug is certified to UL467 and is to be used in accordance with the National Electrical Code, ANSI/NFPA 70.

# HRS160 Installation – Mounting PV Modules and Configurations

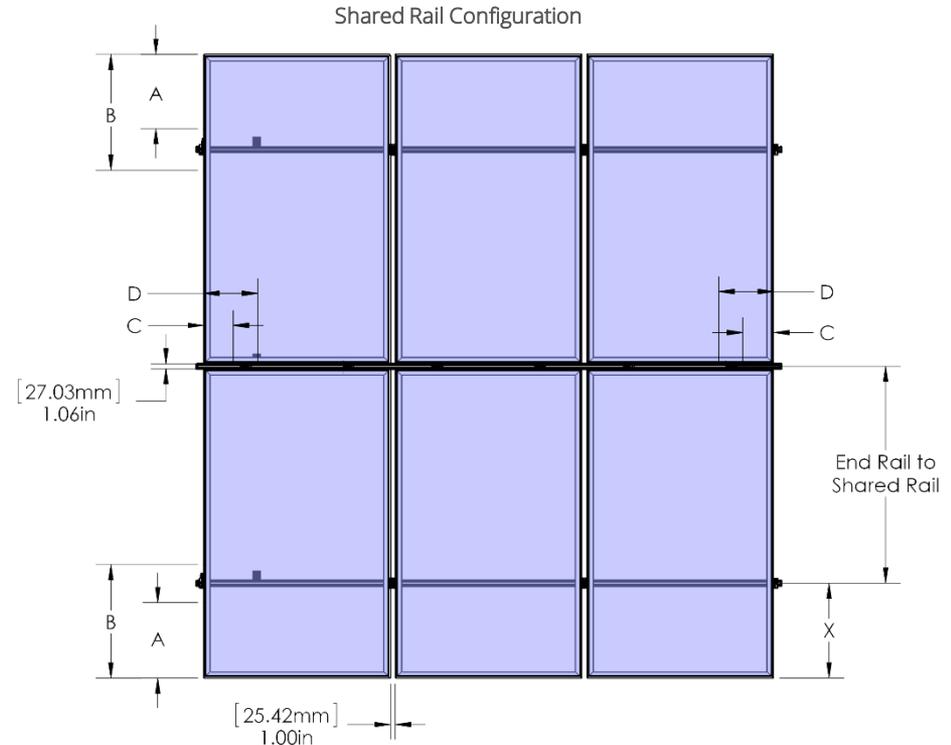
The HRS160 Racking System is a versatile product that can be installed in a Standard or Shared Configuration

Below is an example of the recommended steps to install the system;

1. It is the installers responsibility to plan system location based in the AHJ requirements
2. Mark roof attachment locations on the roof based on the optimal attachment spacing and cantilever values.
  - a. Note: for shared rail configuration the rail distance is critical and needs to be in the exact location.
3. It is the installers responsibility to plan and reference the PV Module installation instructions and requirements. It is the installers responsibility to ensure proper clamp location, thermal spacing and module installation per the manufacturers installation instructions of the module.
4. Install any compatible flashing/mount such as SSR Flashing, QuickMount PV, IronRidge, Unirac, and others. If unsure about compatibility contact an SSR Representative.
  - a) Note: For shared rail configuration it is recommended to have a roof mount with N/S movement to ensure shared rail location is dialed in.
5. Once the Flashing, Mounts and Rails are in place the PV modules and other components can be installed.



A to B = Clamp Safe Zone per PV Module installation instructions  
 C = Module to Module Gap per PV Module installation instructions



A to B = Clamp Safe Zone per PV Module installation instructions  
 C to D = Clamp Safe Zone per PV Module installation instructions

**End Rail to Shared Rail Formula**

PV Module Length – X + 0.5" = Rail Center to Center Distance

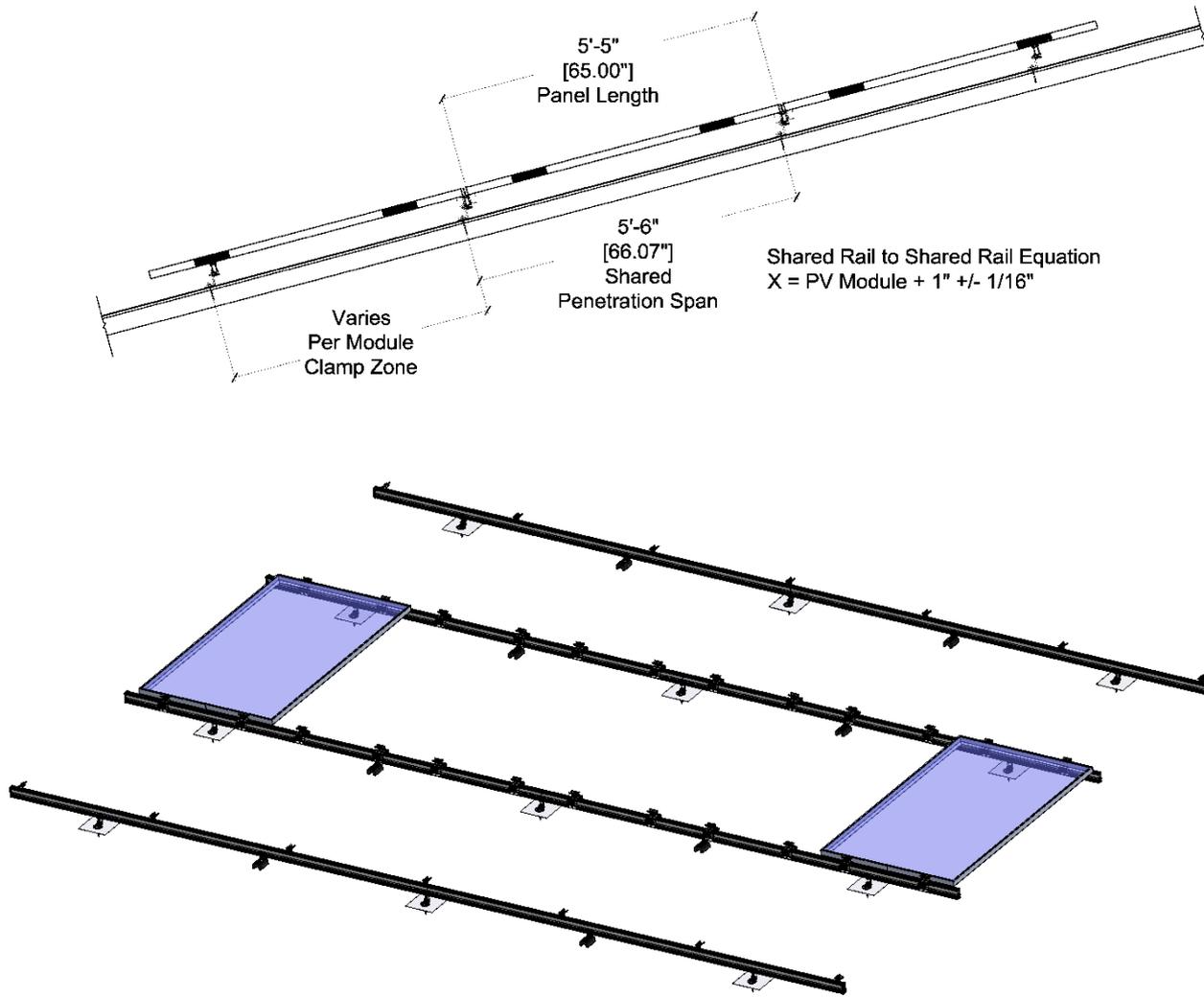
**Shared Rail to Shared Rail Formula**

PV Module Length + 0.5" = Rail Center to Center Distance

To simplify and automate the design process, generate a bill of materials and export to PDF, use the HRS160 Bill of Material Calculator located on the Solar SpeedRack Inc. website.

# HRS160 Installation – Mounting PV Modules and Configurations

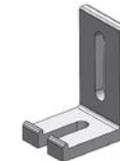
When installing multiple rows in shared configuration the following equation can be used for marking penetration points on the roof:



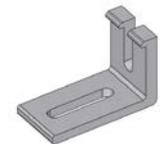
When installing multiple rows in a shared configuration. It is the recommended procedure to install the shared rails first. To ensure that the rail are spanned correct and parallel with each other, the recommended method is to install one panel on each side of the row. This will ensure that any rail adjustments are correct before installing the remaining panels.

For more information and details on dimensional information please go to [www.solarspeedrack.com](http://www.solarspeedrack.com) and download the CAD file and other resource documents.

For Shared rail installation it is recommended to use a mounting foot with North/South roof adjustment such as the SSR Standard L-Foot.



1" Adjustment Short Side



1-1/2" Adjustment Long Side

This will allow for proper rail adjustment and accurate spacing during the installation.

To simplify and automate the design process, generate a bill of materials and export to PDF, use the HRS160 Bill of Material Calculator located on the Solar SpeedRack Inc. website.

# System Load Ratings

## 60 Cell

### Governing Anchorage Uplift Loads

Exposure: B								
Tilt: 0°-27°								
Governing Anchorage Uplift loads (lbs)								
Wind Speed (ASCE 7-10)	Span							
	2 ft.	4 ft.		6 ft.	8 ft.			
115 mph	74	129	151	263	228	396	304	529
120 mph	83	143	169	291	255	438	340	586
140 mph	122	203	249	415	375	625	501	-
160 mph	167	274	341	558	514	840	687	-

Exposure: C								
Tilt: 0°-27°								
Governing Anchorage Uplift loads (lbs)								
Wind Speed (ASCE 7-10)	Span							
	2 ft.	4 ft.		6 ft.	8 ft.			
115 mph	114	191	232	389	350	586	468	-
120 mph	126	210	258	428	388	645	518	-
140 mph	181	295	369	602	557	906	-	-
160 mph	244	393	498	802	751	-	-	-

\* Shaded Cells Represent Edge Zone Conditions

\* Span - Distance between anchors (points that resist uplift - Does NOT include Speedfoot)

## 72 Cell

### Governing Anchorage Uplift Loads

Exposure: B								
Tilt: 0°-27°								
Governing Anchorage Uplift loads (lbs)								
Wind Speed (ASCE 7-10)	Span							
	2 ft.	4 ft.		6 ft.	8 ft.			
115 mph	178	288	360	586	544	884	-	-
120 mph	195	315	397	643	598	-	-	-
140 mph	274	438	558	893	842	-	-	-
160 mph	365	580	745	1182	-	-	-	-

Exposure: C								
Tilt: 0°-27°								
Governing Anchorage Uplift loads (lbs)								
Wind Speed (ASCE 7-10)	Span							
	2 ft.	4 ft.		6 ft.	8 ft.			
115 mph	257	413	525	841	791	-	-	-
120 mph	282	451	576	920	868	-	-	-
140 mph	393	623	802	1270	-	-	-	-
160 mph	521	821	1062	-	-	-	-	-

\* Shaded Cells Represent Edge Zone Conditions

\* Span - Distance between anchors (points that resist uplift - Does NOT include Speedfoot)

### Governing Bearing Support Downward Loads

Exposure: B & C							
Tilt: 0°-27°							
Bearing Support Downward Loads (lbs.)							
Span Between Supports*	Snow Load (psf)						
	0	10	20	30	40	50	
2 ft.	31	131	231	332	432	645	
3 ft.	47	199	352	504	-	-	
4 ft.	63	262	472	676	-	-	
6 ft.	94	402	711	-	-	-	
8 ft.	126	538	-	-	-	-	

\* distance between supports ( i.e. anchors and/or Speedfoot)

### Governing Bearing Support Downward Loads

Exposure: B & C							
Tilt: 0°-27°							
Bearing Support Downward Loads (lbs.)							
Span Between Supports*	Snow Load (psf)						
	0	10	20	30	40	50	
2 ft.	41	162	284	405	527	649	
3 ft.	62	247	431	616	801	-	
4 ft.	81	331	579	827	1075	-	
6 ft.	124	499	872	1246	1620	-	
8 ft.	-	-	-	-	-	-	

\* distance between supports ( i.e. anchors and/or Speedfoot)

Please reference the 60 Cell Module Span Chart;  
<http://www.solarspeedrack.com/pdf/HRS160-60-Cell-Spans.pdf>

Please reference the 72 Cell Module Span Chart;  
<http://www.solarspeedrack.com/pdf/HRS160-72-Cell-Spans.pdf>

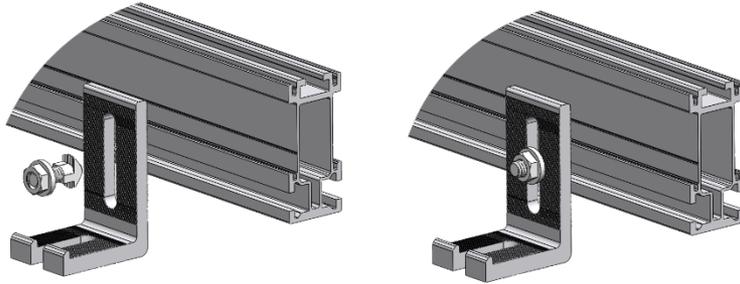
## End Cantilever

Rail Cantilevers are governed by the penetration span.  
 End Cantilever equation:  $\text{Cantilever} = 0.4 * (\text{Interior Span})$

# HRS160 Component Installation

## Bracket Attachments

Brackets can be attached to either side of the rail using the 5/16" Slot and appropriate hardware;

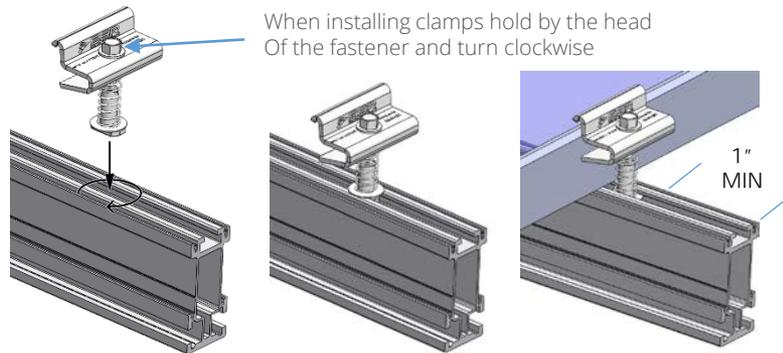


To install insert the **SA-ASM-TBK** (T-Bolt Kit) through the **SA-A-LFS1.9X3** L-Foot bracket and into the slot on the rail. To fasten components Torque to 180 in-lbs. Alternatively a standard 5/16" Bolt or 5/16" Serrated Flange Bolt may be substituted and can install by sliding into the rail channel from either end.



The **SA-ASM-SQK01** Solar SpeedFoot® and **SA-A-LFS1.9X3** L-Foot (Inverter Attachment configuration) install in the same manner with same torque requirements.

## End and Mid Clamp Attachments



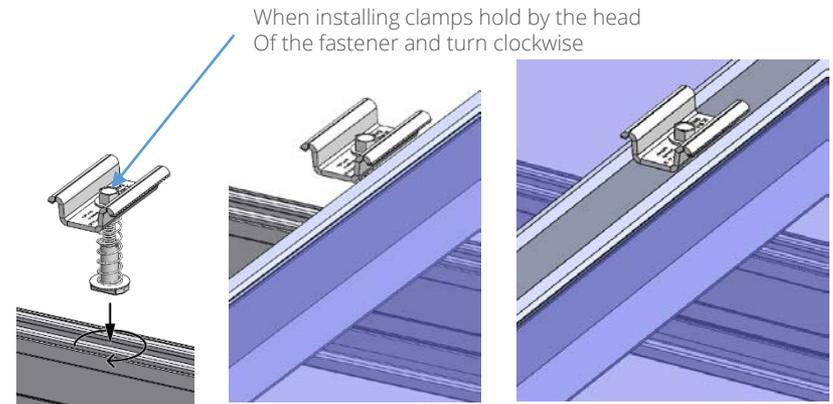
When installing clamps hold by the head Of the fastener and turn clockwise

1" MIN

To install the **HRS-ASM-ECG2.25** End Clamp insert the Assembly into the top rail channel and turn clockwise until you feel the T-Bolt hit the stopping wall of the channel. The End Clamp is held under pressure by the spring keeping it in place. The End Clamp can also move freely in the rail to be placed in the correct location. Once in place slide the PV Module under the clamp. Torque the End Clamp Bolt to 100 in-lbs. using a 3/8" Socket.

HRS End Clamps are adjustable to fit PV Frames Heights between 32mm (1.25") to 50mm (2") high.

**\*End and Mid Clamps tested for use up to 3 times to be applied to a single location**



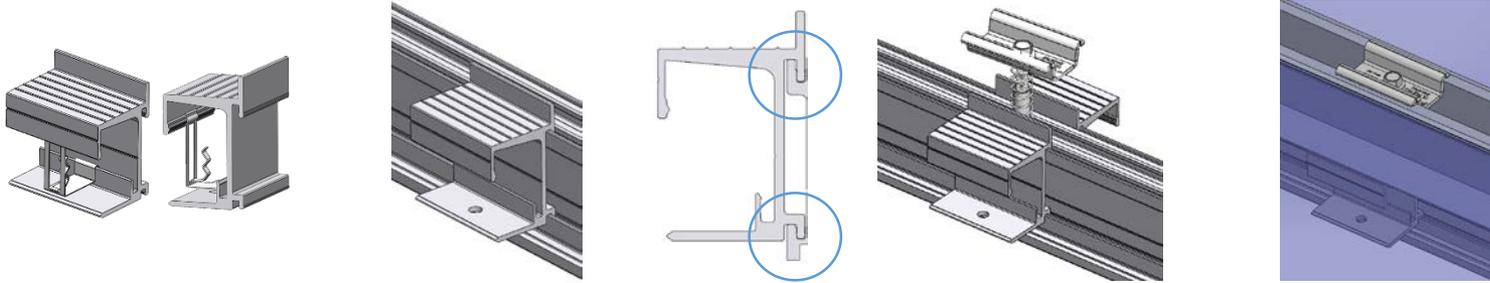
To install the **HRS-ASM-MCG2.25** Mid Clamp in Standard Configuration insert the Assembly into the top rail channel and turn clockwise until you feel the T-Bolt hit the stopping wall of the channel. The Mid Clamp is held under pressure by the spring keeping it in place. The Mid Clamp can also move freely in the rail to be placed in the correct location. Once in place slide the Mid Clamp to the PV Module edge. Then place the second PV Module place under the clamp. Once both PV modules are in place Torque the End Clamp Bolt to 100 in-lbs. using a 3/8" Socket. Mid Clamps must always install on top of two PV Modules.

HRS Mid Clamps are adjustable to fit PV Frames Heights between 32mm (1.25") to 50mm (2") high.

# HRS160 Component Installation

## Hybrid Bracket Attachments

When using the **HRS-A-EPG3** rail as a shared rail a **HRS-ASM-BCLIP-WMV** HRS Rail Clip Support Bracket is required.



The **HRS-ASM-BCLIP-WMV** Clip Bracket comes pre assembled with **SSR Wire Management**. Alternate options are available please refer to page 5 for more info.

The **HRS-ASM-BCLIP-WMV** Clip Bracket installs by inserting the Clip into the two slot channels along the rails. Press and click each bracket into place.

It is recommended that each **HRS-ASM-BCLIP-WMV** Clip Bracket be placed at the shared mid clamp location per the safe zone if the PV Module installation manual. Once the Clip is in place rest the PV Module on the Clip and Torque down the mid clamp bolt to 100 in-lbs. using a 3/8" Socket

## Inverter Attachments

The single inverter kits come with all the necessary hardware to install one micro inverter on the rails.



**SA-ASM-LFATK-516**  
Single Bracket Attachment Kit  
L-Foot Connection Method  
5/16" Hardware included

Attach the L-Foot with the T-Bolt Kit and Torque to 180 in-lbs. Then mount the inverter with the Supplied 5/16" Hardware per the installation Instructions provided of the inverter. Grounding path provided by serrated fasteners

**SA-ASM-DRATK-516**  
Single Bracket Attachment Kit  
Direct Rail Connection Method  
5/16" Hardware Only

For direct rail connection insert The T-Bolt into the top rail channel. Then install the nut to the correct Torque value per the installation Instructions provided of the inverter Grounding path provided by serrated fasteners

## Limited Warranty Conditions

Solar SpeedRack® warrants that its Solar Panel Mounting System (Frame) is free from defects in materials and workmanship for a period of 25 (Twenty-Five) years from the date on which the Frame is purchased from Solar SpeedRack®, on the terms set out in this warranty. In the event that the Frame does not conform to this warranty during the Warranty Period, Solar SpeedRack® will, at its option, either repair or replace the Frame or pay the cost of having the Frame repaired or replaced. To the extent permitted by law, Solar SpeedRack's total liability under this warranty will in no circumstances exceed the repair or replacement of the Frame or payment of the cost of having the Frame repaired or replaced. In the event of replacement of the Frame, any remaining part of the Warranty Period will be transferred to the replacement Frame. This warranty will not apply to any defect or damage to the Frame arising directly or indirectly from:

- Shipment or storage of the Frame;
- Improper installation, maintenance, repair or use of the Frame;
- Normal wear and tear;
- Misuse, neglect, abuse, accidental damage or modification to the Frame;
- Failure to observe the instructions set out in the System Manual;
- Power failure, power surges, lightning, fire, explosion, flood, extreme weather conditions, environmental disasters or other.
- Causes outside Solar SpeedRack's control, as determined by Solar SpeedRack® in its sole discretion.

This warranty does not cover, and under no circumstances will Solar SpeedRack® be liable for, any costs associated with the removal, shipping, handling or re-installation of the Frame or the costs of sending personnel to any site to repair or replace the Frame. This warranty is provided to the original purchaser of the Frame from Solar SpeedRack® (Purchaser) or, where the Purchaser is an installer or builder who on-supplies the Frame to another party, to that other party (End-User). This warranty is transferable between system owners. Where an End-User wants make a claim under this warranty, the End-User must in the first instance contact the installer or builder from whom the Frame was purchased.

All warranty claims must be:

- Made in writing and addressed to the Customer Service Officer, Solar SpeedRack® 2615 Orange Ave. Santa Ana CA 92704
- Accompanied by proof of purchase of the Frame in a form acceptable to Solar SpeedRack®

This warranty will not apply to any claims received by Solar SpeedRack after the expiration of the Warranty Period. Solar SpeedRack® makes no warranties, express or implied, other than the warranties made herein, and specifically disclaims all other warranties, representations and conditions to the extent permitted by law. To the extent permitted by law, in no circumstances will Solar SpeedRack® be liable for direct, indirect, special or consequential damages arising from a defective Frame or for any damage or injury to persons or property. Solar SpeedRack's aggregate liability, if any, in damages or otherwise, will not exceed the invoice value of the Frame at the time of purchase from Solar SpeedRack®. Any provision contained in this warranty which is prohibited or unenforceable in any jurisdiction will be deemed to be ineffective to the extent of such prohibition or unenforceability and will not invalidate the remaining provisions nor affect the validity or enforceability of that provision in any other jurisdiction. This warranty will be governed and construed in accordance with the laws of the State of California and the parties irrevocably submit to the exclusive jurisdiction of the State of California.

## UL2703 Testing Information

The system was evaluated for Bonding connection through testing of CSA Listed Hanwha Q-Cells PV Modules Model Series Q.Pro Blk-G3 XXX where XXX is the output power from 245 to 265 W / Q.PLUS BFR-G4.1 XXX where XXX is the output power from 270 to 280 W and the following NRTL Listed PV Modules:

SolarWorld SunModule PV Modules: SW280-300.

Solar World SW280 (All Sunmodule Plus & Protect SW285-300 33mm Frame)

Canadian Solar PV Modules: CS6X310-315, CS6K265-270, CS6P-260-265, CS6V-225M.

Canadian Solar CS6X310 (315/320P, CS6K270/275M, CS6K265/270M, CS6P-260/265P, CS6V-225M)

Manufactured by LG,

LG PV Modules: LGxxxS1C-A3 (xxx represents 250 to 280), LGxxxS1K-A3 (xxx represents 250 to 275), LGxxxS1W-A3 (xxx represents 250 to 280), LGxxxS1C-B3 (xxx represents 250 to 280), LGxxxS1K-B3 (xxx represents 250 to 275), LGxxxS1W-B3 (xxx represents 250 to 280), LGxxxN1C-A3 (xxx represents 270 to 305), LGxxxN1K-A3 (xxx represents 270 to 300), LGxxxN1W-A3 (xxx represents 270 to 305), LGxxxN1C-B3 (xxx represents 270 to 310), LGxxxN1K-B3 (xxx represents 270 to 300), LGxxxN1W-B3 (xxx represents 270 to 310). PV Frames Model no. 305N1C-B3 (LGxxxS1CA3 ('xxx' is the number from 250 to 280), LGxxxS1KA3 ('xxx' is the number from 250 to 275), LGxxxS1WA3 ('xxx' is the number from 250 to 280), LGxxxS1CB3 ('xxx' is the number from 250 to 280), LGxxxS1KB3 ('xxx' is the number from 250 to 275), LGxxxS1WB3 ('xxx' is the number from 250 to 280), LGxxxN1CA3 ('xxx' is the number from 270 to 305), LGxxxN1KA3 ('xxx' is the number from 270 to 300), LGxxxN1WA3 ('xxx' is the number from 270 to 305), LGxxxN1CB3 ('xxx' is the number from 270 to 310), LGxxxN1KB3 ('xxx' is the number from 270 to 300), LGxxxN1WB3 ('xxx' is the number from 270 to 310)

Winaico PV Modules: WSPxxxm6, (xxx represents 270-290).

Link to Active UL Listing: <https://qai.org/directory/solar-speedrack-inc/>

