



## ***SunModo PV Rack Mounting System***

***UL2703 Compliant***

Please read carefully before installing

The SMR Product is tested and recognized to UL 2703 standards for safety grounding and bonding equipment and meets UL 1703 fire standards.

SunModo PV Rack Mount System can be used to mount photovoltaic (PV) panels in a wide variety of locations. All installations shall be in accordance with NEC requirements in the USA. The self-bonding system is for use with PV modules that have a maximum series fuse rating of 30A. Mechanical design loads per UL 2703: Downward Pressure: 33.42 psf (1600.2 Pa), Upward Pressure: 33.42 psf (1600.2 Pa), Down-Slope: 5 psf (239.4 Pa). Mechanical test loads per LTR AE 2012: Downward Pressure: 50.125 psf (2400 Pa), Upward Pressure: 50.125 psf (2400 Pa).


**Warning:** In Canada the SMR Pitch Roof System can only be installed with maximum PV module area of 22.3 square feet (2.1 square meters).

**Avertissement:** Au Canada, le système de toiture en pente SMR ne peut être installé qu'avec une surface de module PV maximale de 22,3 pieds carrés (2,1 mètres carrés).

## **TABLE OF CONTENTS**

Installer Responsibility.....	5
Safety.....	5
SunModo Racking Self-Bonding System.....	6
SMR Tilt-Up System Components .....	7
List of Compliant PV Modules.....	10
Fault Current Path Diagram.....	13
Tools Required for Installation .....	14
Torque Values.....	15
Sealing Gasket Compression.....	15
SMR Tilt-Up General Assembly .....	16
SMR Tilt-Up System Overview .....	17
Alternative Construction .....	17
SMR Tilt-Up Tilt Angle Selection.....	18
Penetration Sealing Options:.....	19
NanoMount Penetration Sealing .....	20
NanoMount Roof Attachment.....	20
Lag Screw Bottom Side Sealant Application.....	21
Lag Screw Installation.....	21
Lag Screw Top Side Sealant Application .....	21
Self-Tapping Screw Bottom Side Sealant Application.....	22

Self-Tapping Screw Installation.....	22
Self-Tapping Screw Top Side Sealant Application.....	22
Tilt Leg to L-Foot Connection.....	23
Front Rail Attachment.....	23
Rear Rail Attachment.....	23
Rail Splice Installation Instructions:.....	24
SMR Splice.....	24
SMR Splice to First Rail.....	24
SMR Splice to Second Rail.....	24
Thermal Break Installation Instructions:.....	25
SMR Splice.....	25
Gap Between Rails.....	25
Bonding.....	25
SMR Rail and Splice Use Cases.....	26
SMR Rail and Splice Use Cases (Continued):.....	27
PV Module Assembly:.....	27
Microinverter Mounting Kit Installation.....	27
PV Module Clamp Installation.....	27
SMR End Clamp.....	28
End Clamp Location.....	28
SMR Mid Clamp.....	29
SMR Mid Clamp Attachment.....	29
SMR100 Bottom Clamp.....	30
SMR100 Bottom Clamp Attachment.....	30
Additional Attachments:.....	31
Ground Wire Attachment.....	31
Ground Lug Installation.....	31
UL 2703 Label Placement.....	31
Wire Management Clip Installation.....	32
Rail End Cap Attachment.....	32
Conduit Clamp.....	32

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### **Installer Responsibility**

Before ordering and installing materials, all system layout dimensions should be confirmed by field measurements. SunModo reserves the right to alter, without notice, any details, proposals, or plans. Any inquiries that you may have concerning installation of the PV system should be directed to your SunModo Sales representative. Consult SunModo Sales for any information not contained in this manual. This manual is intended to be used as a guide when installing SunModo's racking system. It is the responsibility of the installer to ensure the safe installation of this product as outline herein.

- Installer shall employ only SunModo products detailed herein. The use of non SunModo components can cancel the letters of UL compliance and product warranties.
- Installer is responsible to determine that the roof, its rafters, connections, and other structural components can sustain the array under all environmental loading conditions per the codes and standards; consult with a licensed professional engineer.
- Installer shall guarantee that screws have adequate pullout strength and shear capacities.
- Installer shall adhere to the torque values specified in this Instruction Manual.
- Installer is responsible to install solar panels over a fire-resistant roof covering rated for the application.
- Installer shall adhere to all relevant local or national building codes. If any details of these installation instructions conflict with code requirements, installer should consult with SunModo.
- Installer shall guarantee the safe placement of all electrical details of the PV array.
- Installer to follow all applicable safety requirements during installation.
- Installer shall ensure bare copper grounding wire does not contact aluminum and zinc-plated steel components to prevent risk of galvanic corrosion.
- Installer is responsible for and shall 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, NEC 690: Solar Photovoltaic Systems, and CSA C22.2, Safety Standard for Electrical Installations, Canadian Electrical Code, Part I.
- Installer shall comply with all applicable local, state, and national building codes, including periodic re-inspection of the installation for loose components, loose fasteners, and any corrosion. If loose components, or loose fasteners are found during periodic inspection, re-tighten immediately. If corrosion is found, replace affected components immediately.

### **Safety**

Review relevant OSHA and other safety standards before following these instructions. The installation of solar PV systems is a dangerous procedure and should be supervised by trained and experienced personnel.

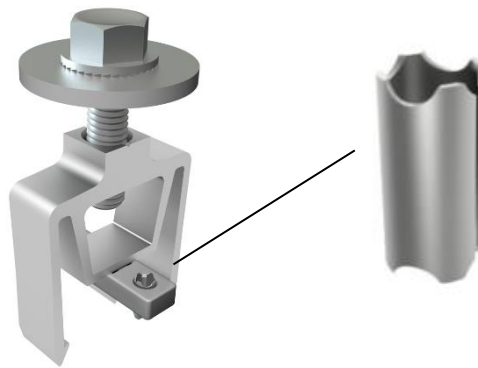
It is not possible for SunModo to be aware of all the possible job site situations that could cause an unsafe condition to exist. The installer of the roof system is responsible for reading these instructions and determining the safest way to install the roof system. These instructions are provided only as a guide to show a knowledgeable, trained erector the correct part placement one to another. If following any of the installation steps would endanger a worker, the erector should stop work and decide upon a corrective action. Provide all required and recommended safety equipment for crew members working on the roof.

### **SunModo Racking Self-Bonding System**

SunModo's SMR system meets the stringent requirements of UL 2703 and CSA C22.2 No. 61730-2 which covers rack mounting systems, mounting grounding/bonding components, and clamping/retention devices for photovoltaic (PV) modules. The SMR system is intended for, but not limited to, PV module installations on residential roof tops, commercial buildings, and freestanding ground mount structures.

The SMR system components are designed in accordance with the National Electrical Code, ANSI/NFPA 70 and Model Building Codes. These code requirements cover rack mounting systems and clamping devices intended for use with PV module systems with a maximum system voltage of 1500V.

The SMR self-bonding system is for use with PV modules that have a maximum series fuse rating of 30A. This means the maximum number of PV modules in the SMR system is limited by the system voltage, so if a system has multiple inverters, the SunModo racking system can theoretically go on forever.



Mid Clamp with Bonding Pins

### SMR Tilt-Up System Components

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NanoMount

NANOMOUNT-B



NanoBit

NANOBIT-B



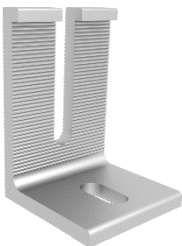
Lag Bolt  
with Sealing Washer

LAG-B



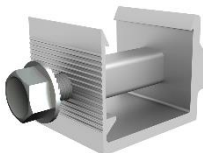
Deck Screw  
#14 Self-tapping Screw with  
Sealing Washer

SCREW-B



Open L-Foot

LFT-OPEN-3-S  
LFT-OPEN-3-B  
LFT-OPEN-4-S  
LFT-OPEN-4-B



SMR100 L-Foot Adaptor

LFA-SMR100-S  
LFA-SMR100-B



SMR Tilt Leg Kits  
with hardware

TILT-08-M  
TILT-14-M  
TILT-25-M



SMR Pop-On End Clamp

CLMP-END-SMR-S  
CLMP-END-SMR-B



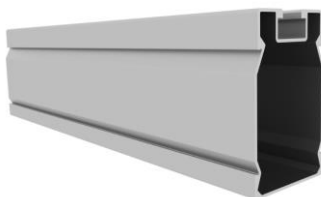
SMR Pop-On Mid Clamp

CLMP-MID-SMR-S  
CLMP-MID-SMR-B  
For single use only



SMR100 Bottom Clamp

CLMP-BOT-SMR100-S  
CLMP-BOT-SMR100-B



SMR100 Rail

SMR100-168-M  
SMR100-168-M-US  
SMR100-168-B





SMR100 Rail Splice

SPLC-SMR100



SMR100 Wire Management Clip

WIRE-SMR100-B



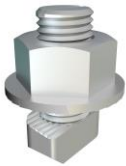
SMR100 Rail End Cap

CAP-SMR100-B



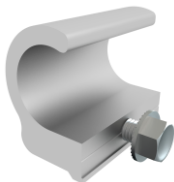
Grounding Lug

GRND-SMR  
For single use only



MLPE Mount

MLPE-SMR



1" Conduit Clamp  
3/4" Conduit Clamp

CLMP-CON-100-S  
CLMP-CON-075-S

## List of Compliant PV Modules

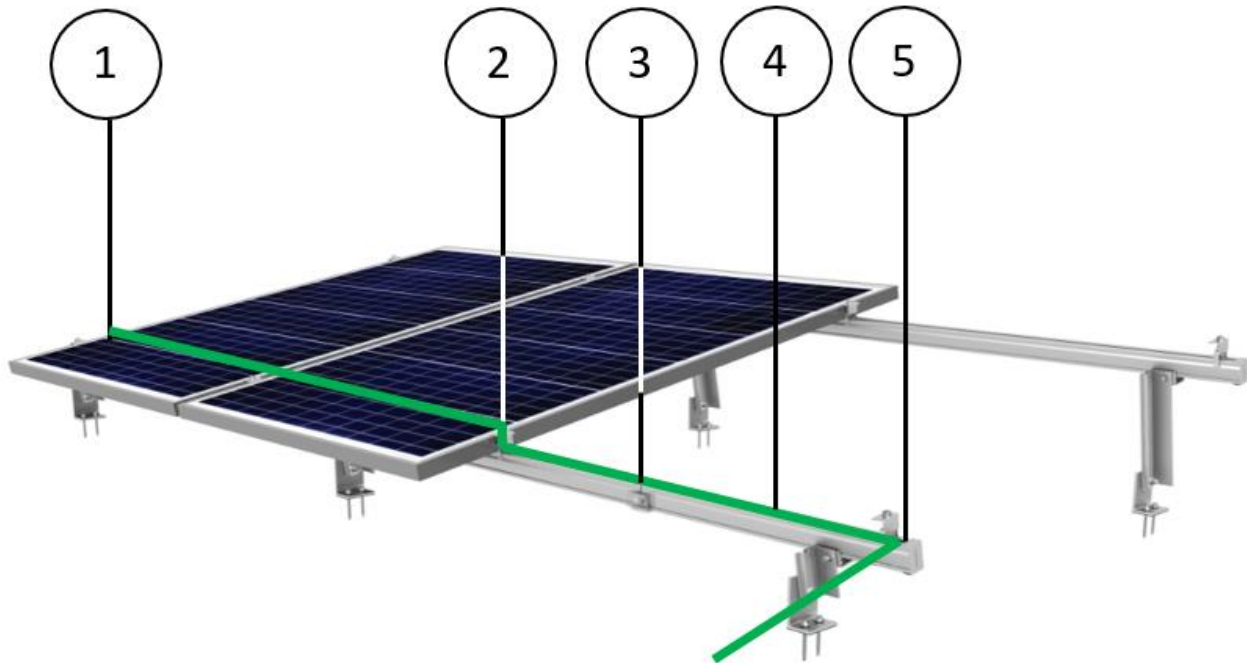
### UL 2703 Qualified Modules for use with SunModo PV Racking Systems

Evaluated PV Modules	
Module manufacturer	Model numbers
Aptos	DNA-108-BF10-xxxW, DNA-108-MF10-xxxW, DNA-120-BF10-xxxW, DNA-120-MF10-xxxW, DNA-120-BF23-xxxW, DNA-120-MF23-xxxW, DNA-144-BF23-xxxW, DNA-144-MF23-xxxW, DNA-120-BF26-xxxW, DNA-120-MF26-xxxW, DNA-144-BF26-xxxW, DNA-144-MF26-xxxW
Astronergy	CHSM6612M-xxx, CHSM6612M/HV-xxx
AXITec Solar	AC-xxxP/60S, AC-xxxMH/120S, AC-xxxMH/120V, AC-xxxMH/144S, AC-xxxMH/144V
Boviet Solar	BVM6610M-xxx, BVM6612M-xxx, BVM6610P-xxx, BVM6612P-xxx
BlueSun Solar	BSMxxxM10-54HPH, BSMxxxM10-54NHB, BSMxxxM10-54NHS, BSMxxxPMB7-46SC, BSMxxxPMB6-60SC, BSMxxxPMB6-70SDC
C-Sun	CSUNxxx-60M, CSUNxxx-60P, CSUNxxx-72M, CSUNxxx-72P
Canadian Solar	CS3N-xxxMS, CS3W-xxxMB-AG, CS3W-xxxP, CS3W-xxxPB-AG, CS6K-xxxM, CS6K-xxxMS, CS6P-xxxM, CS6R-xxxMS, CS6U-xxxP, CS6V-xxxM, CS6V-xxxP, CS6W-xxxMB, CS6X-xxxP
ET Solar	ET-P672xxxWW
Hansol	HSxxxSE-V01
Hanwha Q Cells	Q.PEAK DUO-L-G4.2 xxxW, Q.PEAK DUO L-G5.2 xxxW, Q.PEAK DUO-G5-BLK xxxW, Q.PEAK DUO L-G6.2 xxxW, Q.PEAK DUO L-G7.3 xxxW, Q.PEAK DUO-G5 xxxW, Q.PRO L-G2 xxxW, Q.PEAK DUO ML-G10 xxxW, Q.PEAK DUO XL-G10 xxxW, Q.PEAK DUO XL-G11 xxxW, Q.PEAK DUO XR-G10 xxxW, Q.PEAK DUO BLK-G6 xxxW, Q.PEAK DUO L-G5.2 xxxW, Q.PEAK DUO L-G5.3 xxxW, Q.PEAK DUO L-G6.2 xxxW, Q.PEAK DUO BLK ML-G9 xxxW, Q.PEAK DUO BLK-G10 xxxW, Q.PEAK DUO BLK ML-G10 xxxW, Q.PEAK DUO BLK ML-G10+ xxxW, Q.PEAK DUO BLK-G10+/AC
Hareon	HR-xxxP-24/Ba
Heliene	60M-320-G1-BLK, 66M-360-HJT-M2+BLK, 72M-xxx, 72M-BLK-xxx, 72P-xxx, 96M-xxx
Hyperion Solar	HY-DH108P8-xxxW-B, HY-DH144P8-xxxW
Hyundai	HiS-MxxxTI, HiS-SxxxTI, HiN-SxxxXG (BK), HiS-SxxxYH (BK)
Illuminate USA	IL5-72HBD-xxxM, IL8-66HGD-xxxM
Itek Energy	ITxxxHE, ITxxxSE
JA Solar	JAM60D00-xxx/BP, JAM72S09-xxx/PR, JAP6 72-xxx/3BB, JAM72D00-xxx/PR, JAM72S09-xxx/PR

Jinko	JKMxxxM-6RL3-B, JKMxxxM-60HL, JKMxxxM-60L, JKMxxx-72L-V, JKMxxx-72HL-V, JKMxxxM-60HBL, JKMxxxM-72HL-V, JKMxxxM-72HL-TV, JKMxxx-7RL3-TV, JKMxxx-60HL4, JKMxxx-60HL4-V, JKMxxx-72HL4, JKMxxx-72HL4-V, JKMxxxM-72HL4-TV, JKMxxxM-72HL4-BDVP, JKM430M-72HLM-TV
Kyocera	KDxxxGX-LFB, KUxxx-6MCA, KDxxxGX-LFB2
LG	LGxxxA1C-A6, LGxxxMIC-A6, LGxxxMIK-A6, LGxxxNIC-A6, LGxxxNIC-E6, LGxxxNIC-G4, LGxxxNIC-N5, LGxxxNIK-A6, LGxxxNIK-B6, LGxxxNIK-E6, LGxxxNIK-G4, LGxxxNIK-V5, LGxxxNIT-G4, LGxxxN2T-E6, LGxxxN2W-A5, LGxxxN2W-B3, LGxxxN2W-E6, LGxxxN2W-G4, LGxxxN3K-A6, LGxxxQAC-A6, LGxxxQAK-A6, LGxxxQ1C-A6, LGxxxQ1C-V5, LGxxxQ1K-A6, LGxxxQ1K-V5, LGxxxS1C-G4, LGxxxS2W-G4
LONGi	LR4-60HPB-xxxM, LR4-72HPH-xxxM, LR5-54HABB G2-xxxM, LR5-54HABB V2-xxxM, LR5-54HABB 2.0+2.0-xxxM, LR5-72HBD-xxxM, LR5-72HBD Vx xxxM, LR5-54HPB-xxxM, LR5-54HTB-xxxW, LR6-60PE-BOW-xxxW, LR6-60HPH-BOB-xxxW, LR7-54HGBB-xxxW, LR672HPH-SOW-xxxW, LR7-54HGBB-xxxM, LR7-72HGD-xxxM, LR8-66HGD-xxxM
Meyer Burger	MB_B120AyB_XXX, MB_TG120ByB_XXX, MB_W120AyB_XXX
Mission Solar	MSExxxSQ5T, MSExxxSQ8T, MSExxxSO9J, MSExxxSQ9S, MSExxxSR8T, MSExxxSR9S, MSExxxSX5T, MSExxxSX5R, MSExxxSX6Z, MSExxxSX6W
Mitrex	Mxxx-A1F, Mxxx-B1F, Mxxx-H1H, Mxxx-I1H, Mxxx-L3H
Mitsubishi	PV-MLExxxHD
Panasonic	EVPVxxxH, EVPVxxxK, EVPVxxxPK, VBHNxxxKA01, VBHNxxxKA03, VBHNxxxKJ01, VBHNxxxSA16, VBHNxxxSA17
Philadelphia Solar	PS-M108(HCBF)-xxxW, PS-M144(HCBF)-xxxW, PS-MNB108(HCBF)xxxW, PS-MNB144(HCBF)xxxW, PS-MNB156(HCBF)xxxW
Phono Solar Tech	PSxxxM-20/U, PSxxxP-24T, PSxxxMI-24/TH, PSxxxMIH-24/TH, PSxxxMI-24/TH
REC Solar	RECxxxNP, RECxxxTP2, RECxxxTP2 BLK2, RECxxxTP2S 72, RECxxxTP2SM 72, RECxxxNP2 BLACK, RECxxxNP3 BLACK, RECxxxAA BLACK, RECxxxTP4 BLACK, RECxxxAA PURE, RECxxxAA PURE-R
RECOM	RCM-xxx-SMS, RCM-xxx-SMD2, RCM-xxx-SMA, RCM-xxx-SMD2, RCM-xxx-6ME, RCM-xxx-6MF
Renesola	JC xxx M-24/Bbs, JC xxx M-24/Bb, JC xxx M-24/Abs, JC xxx S-24/Abs, JC xxx S-24/Bbs
Risen Solar	RSM40-8-xxxM, RSM120-8-xxxM, RSM144-6-xxxM, RSM150-8-xxxM, RSM156-6-xxxM
Sanyo	HIP-xxxBA3, HIT-NxxxA01
SEG	SRP-xxx-6MA, SRP-xxx-6MA-DG, SRP-xxx-6MB, SRP-xxx-6MB-DG, SRP-xxx-6MB-HV, SRP-xxx-6PA, SRP-xxx-6PA-DG, SRP-xxx-6PA-HV, SRP-xxx-6PB, SRP-xxx-6PB-DG, SRP-xxx-6PB-HV, SEG-xxx-BMA, SEG-xxx-BMA-HV, SEG-xxx-BMB-HV, SEG-6MA-xxxBB, SEG-6MA-xxxBW, SEG-6MA-xxxWB, SEG-6MA-xxxWW, SEG-6MB-


	xxxBB, SEG-6MB-xxxBW, SEG-6MB-xxxWB, SEG-6MB-xxxWW, SEG-BMA-xxxBB, SEG-BMA-xxxBW, SEG-BMA-xxxBB, SEG-BMA-xxxWB, SEG-BMA-xxxWW, SRP-xxx-BMA, SRP-xxx-BMA-HV, SRP-xxx-BMB, SRP-xxx-BMB-HV, SRP-xxx-BMZ, SRP-xxx-BMZ-HV, SRP-xxx-BPA, SRP-xxx-BPA-HV, SEG-xxx-BMD-HV, SEG-480-BTB-BG, SEG-xxx-BTD-BG
Silfab	SLAxxxM, SLGxxxM, SLAxxxMCH, SLAxxxMWT, SLA-M xxx, SLA-X-xxx, SLG-X-xxx, SIL-xxx NL/BL/HC/HC+/HL/NT/ML/BK/NX/NU
Solaria	PowerX-xxxR, PowerXT-xxxR-AC, PowerXT-xxxR-BX, PowerXT-xxxR-PX, PowerXT-xxxR-BD, PowerXT-xxxR-PD, PowerXT-xxxR-PD
Solar 4 America	S4Axxx-72MH5, S4Axxx-72MH5BB, S4Axxx-108MH10, S4Axxx-144MH10, S4A-USxxxB
SolarWorld	Sunmodule SW series: SW xxx mono and poly, SW xxx mono, SW xxx poly, Sunmodule Plus series: xxxW mono, Sunmodule Protect xxxW mono, Sunmodule SW xxx poly / Pro-Series, Sunmodule Pro-Series: xxxW poly, xxxW XL mono, Sunmodule Plus: xxxW mono
Stion	STO-xxxA
SunEdison	FxxxSMRD, FxxxSMRC, RxxxSMRC
SunPower Maxeon Technology	SPR-xxxE-WHT-D, SPR-Axxx, SPR-E19-xxx, SPR-E19-xxx-COM, SPR-E19-xxx, SPR-E20-xxx, SPR-E20-xxx, SPR-E20-xxx-COM, SPR-E20-xxx-D-AC, SPR-P17-xxx-COM, SPR-P5-xxx-UPP, SPR-X20-xxx-BLK, SPR-X20-xxx-BLK-B-AC, SPR-X20-xxx-C-AC, SPR-X21-xxx-BLK, SPR-X21-xxx-BLK-D-AC, SPR-X21-xxx, SPR-X21-xxx-COM, SPR-X21-xxx-D-AC, SPR-X21-xxx-BLK, SPR-X21-xxx-BLK-D-AC, SPR-X21-xxx-BLK, SPR-X21-xxx-COM, SPR-X22-xxx, SPR-X22-xxx-COM, SPR-X22-xxx-D-AC, SPR-X22-xxx-D-AC, SPR-MAX3-xxx-BLK-R, SPR-MAX6-xxx-BLK-E3-AC, SPR-MAX6-xxx-BLK-E4-AC
Trina	TSM-xxx PC/PA05, TSM-DE15M(II), TSM-DEG15MC.20(II), TSM-DE15H(II), TSM-DEG15HC.20(II), TSM-DE15V(II), TSM-DEG15VC.20(II), TSM-DEG18MC.20(II) TSM-DE19, TSM-DEG19C.20, TSM-DE21, TSM-DEG21C.20
URE	FAMxxxE7G-BB, FAMxxxE8G-BB, FBMxxxMFG-BB, F6MxxxE7G-BB, FBMxxxMFG-BB
Yingli	YLxxxP-29b
ZnShine	ZXM6-NHLDD144 Series, ZXM6-NH120 Series, ZXM7-SHLDD144 Series, ZXM7-SH144 Series

## Fault Current Path Diagram



Items are listed in the fault current path in order from the PV Panel to the Grounding Lug:

1. PV Panel
2. Mid Clamp Kit
3. SMR Rail Splice
4. SMR Rail
5. Ground Lug

Fault Current Path 

### Tools Required for Installation

---

Impact Driver



Band Saw



Adjustable Torque Wrench, 0 – 35 Nm



Tape measure



Chalk line or laser



Caulk gun and silicon sealant

- ChemLink M1 (or equivalent) for wood and composite roofs
- ChemLink DuraLink (or equivalent) for metal roofs



Male hex drive impact socket adapter



13mm (1/2") 6-point Socket



Anti-seize compound  
(Permatex 80071 or equivalent)

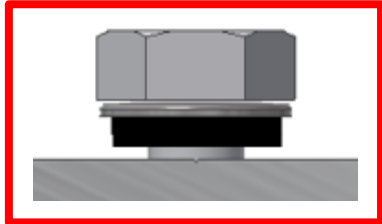

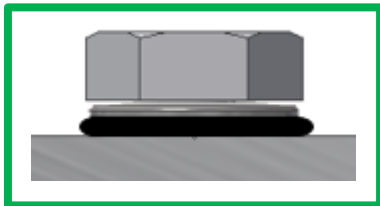


## Torque Values

These values must be adhered to, both for mechanical strength and to insure the performance of the integral grounding and bonding features. It is required that a torque wrench be used to measure the bolt torque during final assembly, and it is recommended that anti-seize compound be applied to the screw threads.

Hardware	Torque
Ground Lug, Screw to secure Ground Wire	5.6 Nm (4.2 ft.-lbs)
Ground Lug, Flange Nut	10.2 Nm (7.5 ft-lbs)
SMR End/Mid Clamps	9.4 Nm to 10.2 Nm (6.9 ft-lbs to 7.5 ft-lbs)
SMR L-Foot Adaptor	13 Nm to 15 Nm (10 ft-lbs to 11 ft-lbs)
Self-tapping Screws	As required
Lag Screw	As required

## Sealing Gasket Compression

<p>Incorrect: Under compressed EPDM Sealing Gasket</p> 	<p>Incorrect: Over compressed EPDM Sealing Gasket</p> 	<p>Correct: Compression of EPDM Sealing Gasket</p> 
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### **SMR Tilt-Up General Assembly**

The SMR Tilt-Up shown below is just one example of the many ways the system can be configured. Consult your project drawings for specific dimensions, attachment configurations and assembly options.





### SMR Tilt-Up System Overview

The SMR Tilt-Up System is an adjustable single module row and low point load system that is ideal for light roof structure application. The design has an adjustable tilt leg that offers maximum flexibility and tilt degree options that maximize power output production. The installation is easy and quick which saves labor cost.

Flat Roof Mounting L-Foot combined with a Tilt Leg can give the system any pitch required.



SunModo offers three standard Tilt Leg lengths 8 inch (front leg), and 14 or 25 inch (rear legs) in order to achieve tilt angles of 10 and 20 degrees. A 9-foot full length Tilt Leg is available for on-site cutting.

### Alternative Construction

The L-Foot, Front and Rear Tilt Legs can be fabricated from 2 X 2 X 1/8-inch-thick aluminum angle channel. After fabricating these parts follow the instructions below to complete the assembly.

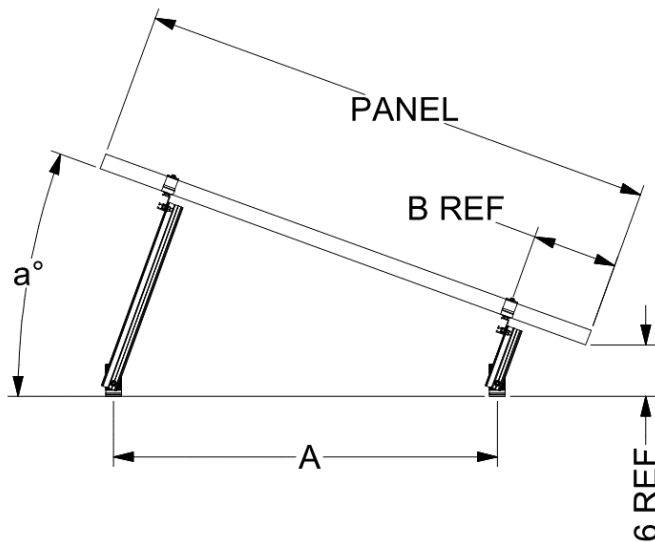


## SMR Tilt-Up Tilt Angle Selection

The SMR Tilt Leg chart shown below has been provided to help you selected your desired tilt angle.

**Leg Selection Chart**

XX CELL PANEL	K10527-XXX-ML	A50265-XXX-ML	FRONT LEG	REAR LEG	a°
60/72 CELL PANEL	K10527-008-ML	A50265-008-ML	8in		10°
	K10527-014-ML	A50265-014-ML		14in	
	K10527-008-ML	A50265-008-ML	8in		20°
	K10527-025-ML	A50265-025-ML		25in	



As viewed from E-W  
Dimensions are reference only

## Penetration Sealing Options

There are a variety of penetration sealing options, your roof installer should specify the type of penetration sealant to be used.

A structural engineer should specify the type of fastener to be used. Follow the manufacturer's recommendation on the installation and torque to be used with a particular fastener type.



### **NanoMount Penetration Sealing**

The NanoMount's penetration sealing system has been tested in accordance with ASTM E331 and ASTM E2140 and has been proven to be a replacement to other penetration sealing options.

The NanoMounts are compatible with PVC, EPDM, PIB, and TPO single ply roofing membranes. The NanoMounts are also designed for use on granulated modified bitumen, asphalt, and coal tar B.U.R. (built up roofing).

### **NanoMount Roof Attachment**

Bonding surfaces should be clean, dry, and free from all contamination that may inhibit the sealant's performance.

Remove all previously applied caulk, mastic, cement, asphalt, pitch pans and other contaminants from penetrations with a wire brush. Brush away all gravel or loose granules.

Isopropyl alcohol is an effective cleaner for surface preparation.

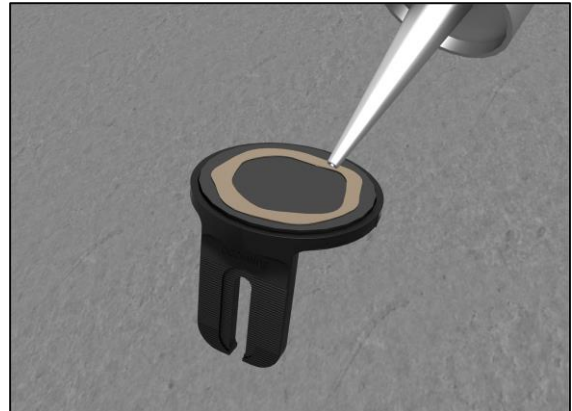


### Lag Screw Bottom Side Sealant Application

Clear the roof area of any dirt, grease, or moisture before installing the NanoMount.

Apply a circular bead of composite roof sealant, such as Chem-link M1, around the bottom of the NanoMount.

Apply additional sealant to the roof if needed to seal gaps or to smooth uneven surfaces.

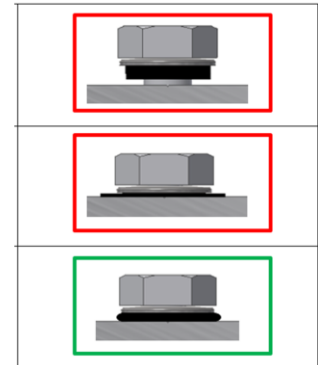
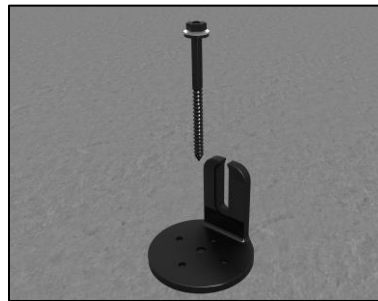


### Lag Screw Installation

Locate the center of the rafter in the desired roof location and drill a 7/32" [6mm] pilot hole. Clear away any debris before filling the pilot hole with sealant.

Use a 13mm (1/2") hex socket to install the #14 Self-Tapping Screws.

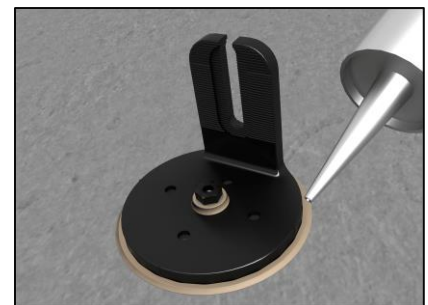
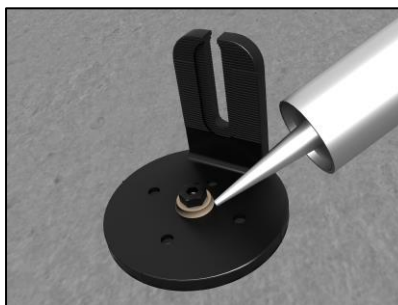
Care should be taken to avoid under and over compression of the EPDM sealing washers.



### Lag Screw Top Side Sealant Application

Apply a copious amount of sealant around the Lag Screw and Sealing Washer of the NanoMount.

Apply a copious amount of sealant around the base of the NanoMount.

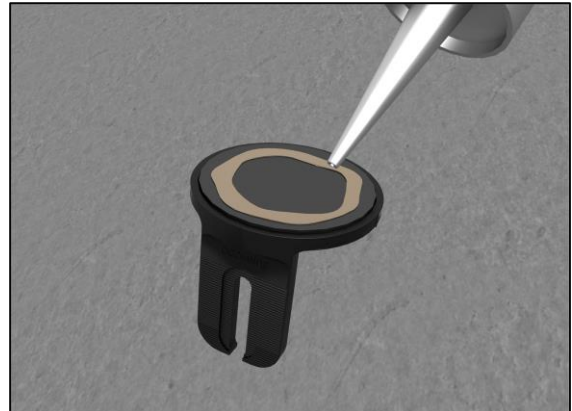


### Self-Tapping Screw Bottom Side Sealant Application

Clear the roof area of any dirt, grease, or moisture before installing the NanoMount.

Apply a circular bead of composite roof sealant, such as Chem-link M1, around the bottom of the NanoMount.

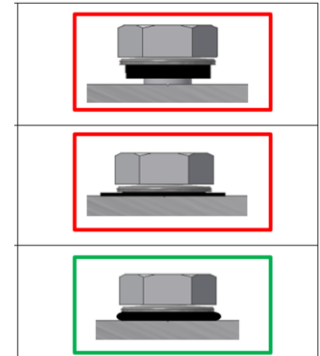
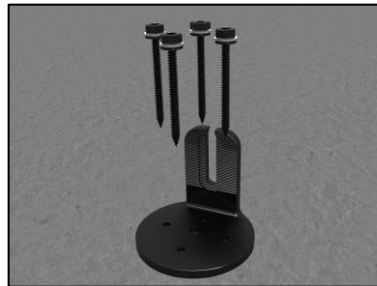
Apply additional sealant to the roof if needed to seal gaps or to smooth uneven surfaces.



### Self-Tapping Screw Installation

Locate the desired roof location and install the four (4) Self-Tapping Screws with Sealing Washers. Use a 13mm (1/2") hex socket to install the #14 Self-Tapping Screws.

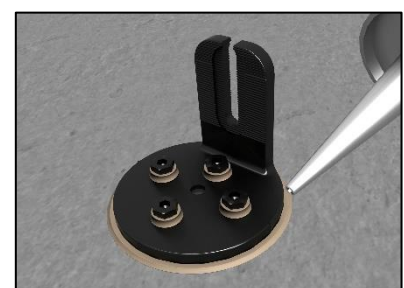
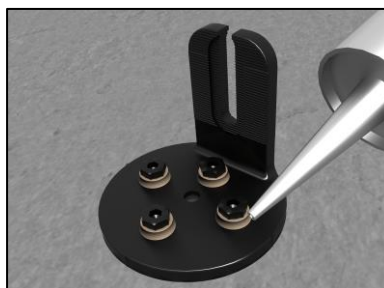
Care should be taken to avoid under and over compression of the EPDM sealing washers.



### Self-Tapping Screw Top Side Sealant Application

Apply a copious amount of sealant around the four (4) Self-Tapping Screws and Sealing Washers of the NanoMount.

Apply a copious amount of sealant around the base of the NanoMount.



### Tilt Leg to L-Foot Connection

Attach the Tilt Leg to the L-Foot using the M8 Bolt and Flange Nut. Torque to 15 ft. lbs.

Loosely install the L-Foot Adaptor to the L-Foot using the M8 Bolt provided.



### Front Rail Attachment

Install the Rail onto the L-Foot Adaptor. Confirm that the hooks on the L-Foot Adaptor are fully engaged with the hooks on the side of the Rail.

Adjust the Rail to the desired location and then secure the Rail to the L-Foot Adaptor using the M8 Bolt; use a 13mm (1/2") hex socket and torque to 13Nm (10 ft-lbs).



### Rear Rail Attachment

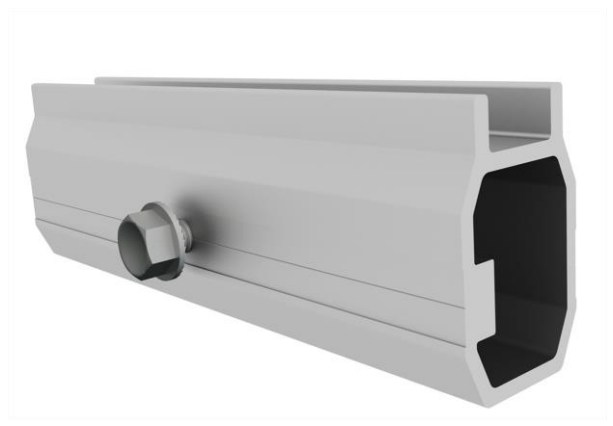
Use the Front Leg assembly instructions to complete the Rear Leg assembly.



### Rail Splice Installation Instructions:

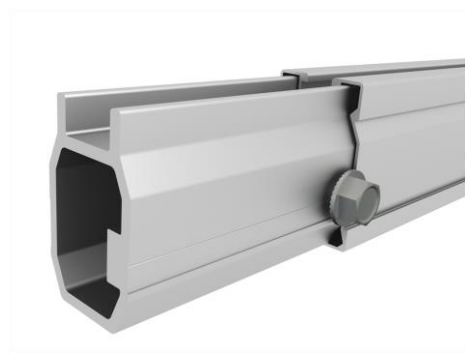
#### SMR Splice

The SMR Rail Splice has been designed to be both a structural and bonding rail splice.



#### SMR Splice to First Rail

Insert the SMR Splice into the first Rail.

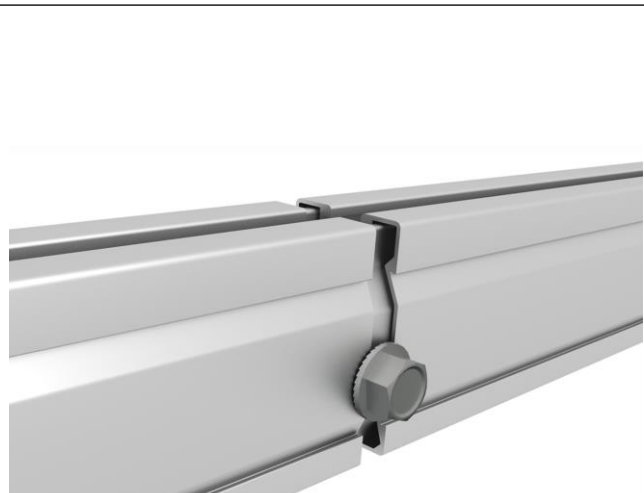


#### SMR Splice to Second Rail

Insert the SMR Splice into the second Rail until both Rails are stopped by the M8 Bolt.

Secure the SMR Rail Splice by tightening the M8 Bolt; use a 13mm (1/2") hex socket and torque to 13Nm (10 ft-lbs).

See the SMR Rail and Splice Use Case section for permissible Splice locations.



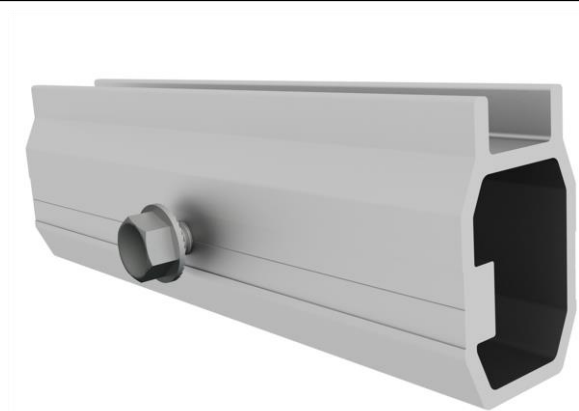


### Thermal Break Installation Instructions:

#### SMR Splice

The maximum permissible continuous Rail run before a thermal break is 60 feet.

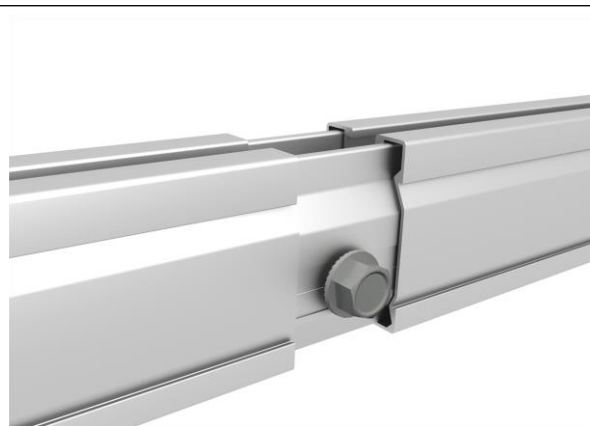
In cases where a thermal break is necessary it is recommended to use an SMR Splice in conjunction with the Wiley Bonding Jumper (WEEBNDJMP8.0) to insure continuous bonding across the thermal break.



#### Gap Between Rails

Insert the SMR Splice into the Rails with a 1-1/4-inch gap between Rails.

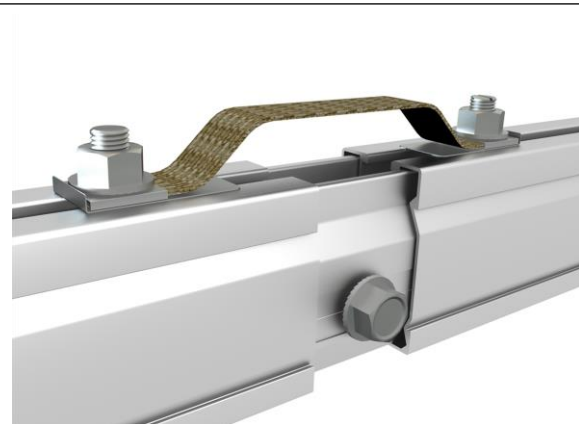
Modules cannot be installed over a thermal break. The row of continuous modules must end before the thermal break and a new row must start after the thermal break.



#### Bonding

Secure the Wiley Bonding Jumper to the Rails using either the SMR Microinverter Mounting Kit (shown) or by using M8 Nuts and Bolts.

Ensure a loop is left in the Bonding Jumper to allow for thermal expansion and torque to 13Nm (10 ft-lbs).



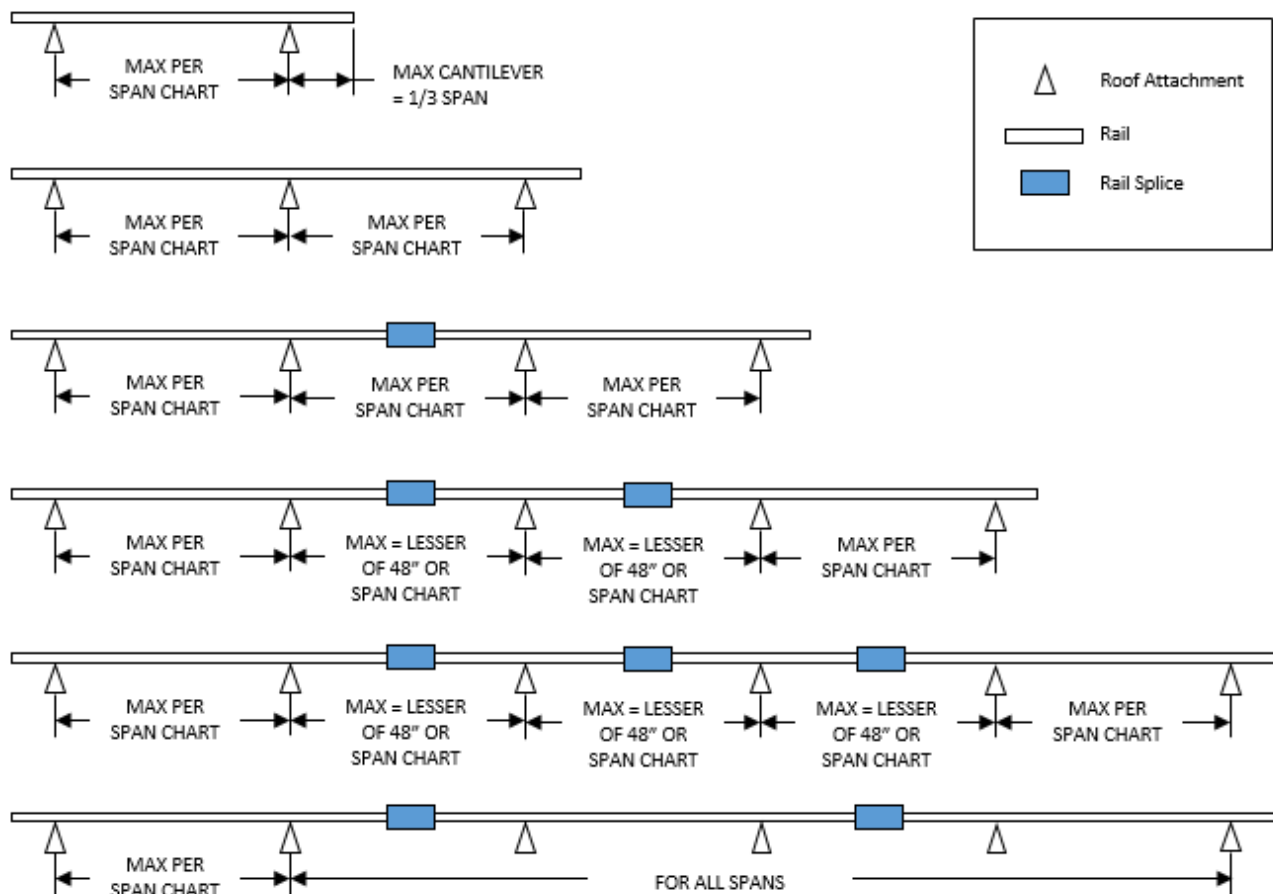
## SMR Rail and Splice Use Cases

SMR span charts are available for download on the SunModo website.

Rail shall be continuous and not spliced over a minimum of 2 supports except for approved span lengths per SunModo's span charts. In these cases, it is acceptable to use a minimum of 1 support per rail section as long as all supports are located at a minimum of 48-inches on center and the first and last rail sections have a minimum of 2 supports.

Installation over roof overhangs or within 10" of any roof edge is not recommended.

Maximum end cantilever of aluminum support rail shall not exceed 1/3 of allowable span in the roof wind pressure zone of the cantilever.



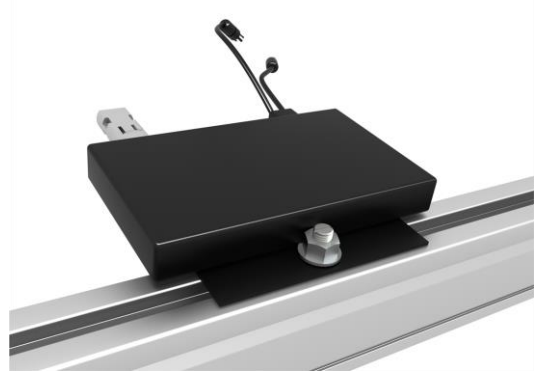
### SMR Rail and Splice Use Cases (Continued):

- Rails installed with (2) Roof Attachments (1 rail span):  
SMR Rail Splice where required shall be installed within a distance of  $L/4$  from either Roof Attachment, where "L" is the rail span.
- Rails installed with (3) or more Roof Attachments (2 or more rail spans):  
SMR Rail Splice where required shall not be installed within a distance of  $L/8$  from any Roof Attachment, where "L" is the rail span.

## PV Module Assembly

### Microinverter Mounting Kit Installation

Install the T-Bolt into the Rail in the desired location. Add a lock washer between the Rail and microinverter mounting bracket. Add a lock washer on top of the microinverter mounting bracket and secure using the hex nut. Use a 13mm ( $1/2$ ") hex socket and torque to 13Nm (10 ft-lbs).

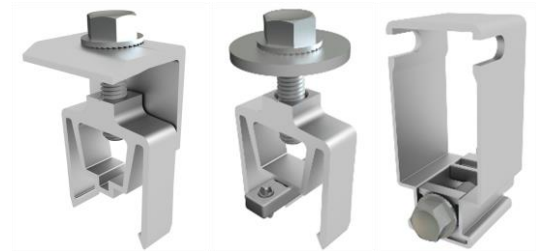


### PV Module Clamp Installation

Proceed with the mounting of the PV modules using the mid and end clamps.

Installing Mid Clamps: A mid clamp is used between PV modules. It will produce  $1/2$ " spacing between PV module frames.

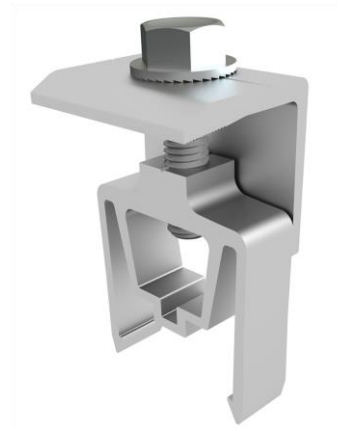
An End Clamp is used to secure PV modules at the ends of a row.



### SMR End Clamp

Install the End Clamp on the Rail at the ends of the PV module array:

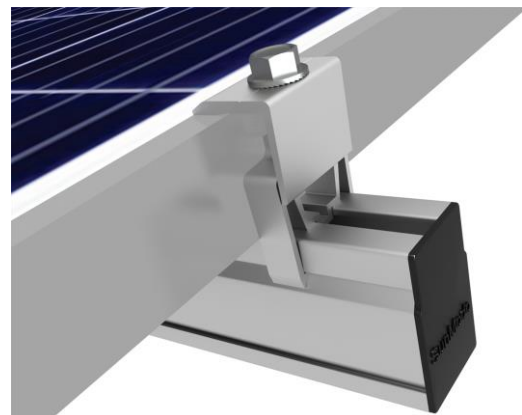
- Confirm that the hooks on the End Clamp are fully engaged with the hooks on the side of the Rail.
- Use your free hand to support the End Clamp against the module frame while tightening.
- Use a 13mm (1/2") hex socket and torque to 9.4 Nm (6.9 ft-lbs).



### End Clamp Location

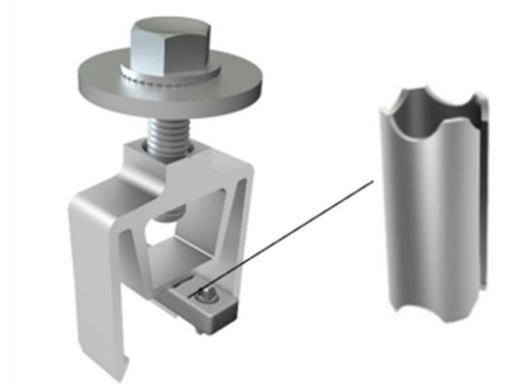
There must be a minimum of 1.5" [38.1mm] of Rail extending beyond the PV module frame.

Secure the PV module frame to the Rail using the End Clamp; use a 13mm (1/2") hex socket and torque to 9.4 Nm (6.9 ft-lbs).



### SMR Mid Clamp

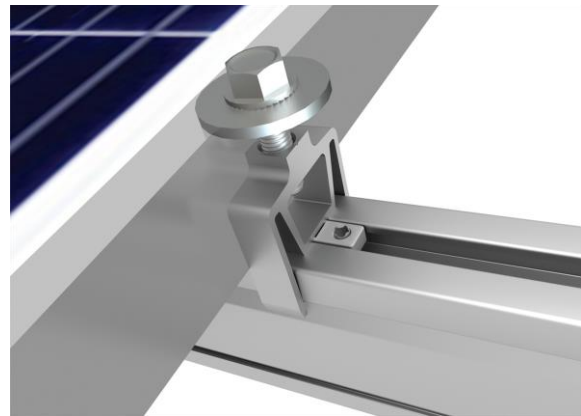
The SMR self-bonding system is for use with PV modules that have a maximum series fuse rating of 30A.



### SMR Mid Clamp Attachment

Install the Mid Clamp on the Rail between PV modules.

- Confirm that the hooks on the Mid Clamp are fully engaged with the hooks on the side of the Rail.
- Secure the PV panel frame to the Rail using the Mid Clamp; use a 13mm (1/2") hex socket and torque to 9.4 Nm (6.9 ft-lbs).



### SMR100 Bottom Clamp

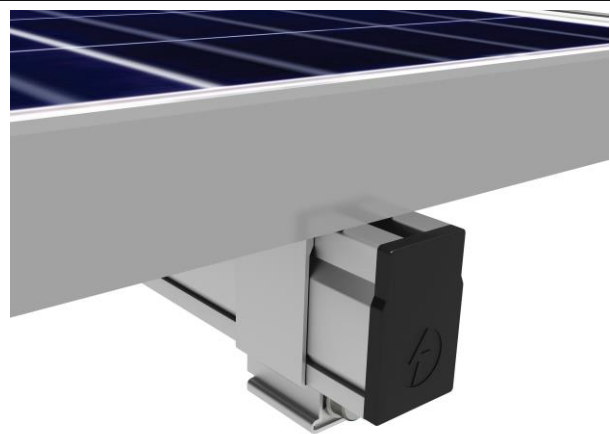
The SMR100 Bottom Clamp secures the PV module frame flange to the Rail which allows for flush mounting the PV panel with the end of the Rail.



### SMR100 Bottom Clamp Attachment

Install the SMR100 Bottom Clamp on the Rail at the ends of the PV module array:

- Slide the SMR Bottom Clamp onto the Rail and pull forward to fully engage the module frame flange.
- Use your free hand to support the Bottom Clamp against the panel frame flange while tightening.
- Use a 13mm (1/2") socket driver and torque to 9.4 Nm (6.9 ft-lbs).

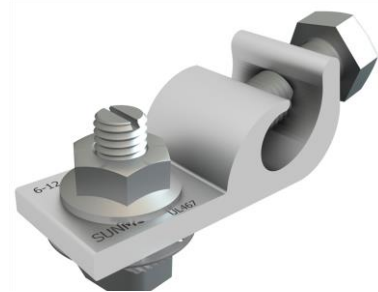


### Additional Attachments:

#### Ground Wire Attachment

The Ground Lug is intended for a single use after final torque values are reached and is designed to terminate or pass thru: #6 thru #12 AWG cable, either solid or stranded, including #6 thru #12 THHN or THWN jacketed cable.

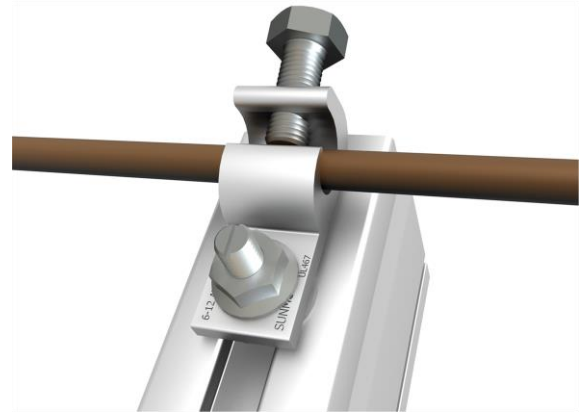
See PV module's installation instructions when mounting the Ground Lug to the PV module.



#### Ground Lug Installation

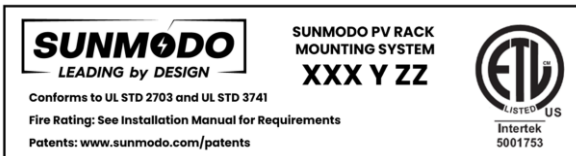
The picture shows a Ground Lug mounted on one Rail per row of panels.

Ground Lug K10469-001 and detailed installation document D10003 are available from SunModo separately.



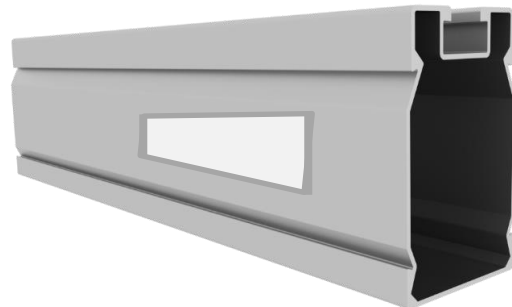
#### UL 2703 Label Placement

When requested the UL 2703 Label can be located on the Rail.



Date Code: Letters "XXX Y ZZ" are defined as follows:

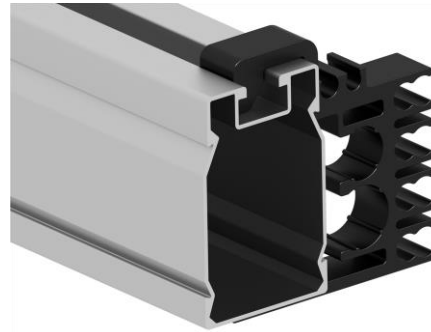
- XXX shall be used to identify the Manufacturer.
- Y shall be used to identify the Quarter of the year manufactured, i.e., 1, 2, 3, 4.
- ZZ shall be the last 2 digits of the Year manufactured, i.e., 25, 26, 27.



### Wire Management Clip Installation

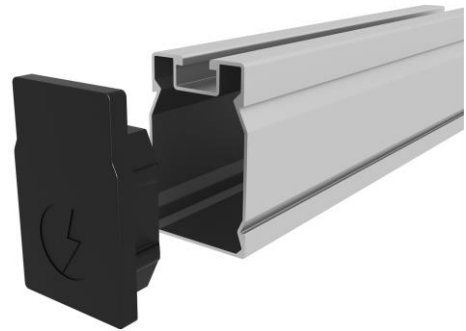
Install the Solar Panel Combo Cable Clip into the top Rail channel and secure by locking into place.

Install the trunk cable and the solar panel cables into the clip.



### Rail End Cap Attachment

End Caps can be attached to the end of the Rail as shown.



### Conduit Clamp

Combine the Conduit Clamp with any L-Foot to create conduit supports in the desired locations.

