SunModo PV Rack Mounting System

UL2703 Compliant

Please read carefully before installing

Product is tested to 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).

TABLE OF CONTENTS

Installer Responsibility 4
Safety 4
SunModo Racking Self-Bonding System 5
Ground Mount System Components 6
List of Compliant PV Modules 10
Fault Current Path Diagram 13
Tools Required for Installation 14
Torque Values 15
Ground Mount Overview 16
- Post Ground Mount 17
- Ballasted Ground Mount 17
- Ground Screw/Helical Anchor Ground Mount 17

Installation Instructions: 18
- Post Base Plate to Precast Concrete Block 18
- Helical Earth and Ground Screw Anchors Installation 19
- Pipe Cap to Post Attachment 19
- Horizontal Pipe to Pipe Cap Attachment 20
- Rail to Pipe Attachment 20
- Pipe Clamp to Post Attachment 20
- Pipe Clamp to Brace Attachment 21
- Pipe to Pipe External Splice 21
- Rack Leveling 22

PV Module Assembly 22
Microinverter Mounting Kit Installation 22

PV Module Overhang 22
PV Module Clamp Installation 23
SMR End Clamp Attachment 23
End Clamp Attachment 23
SMR300 Bottom Clamp Attachment 24
Ground Wire Attachment 24
Ground Lug Installation 24
Rail End Covers 25
UL 2703 Label Placement 25

SunModo Corporation:
Vancouver, Washington
www.SunModo.com
Ph: 360-844-0048
info@sunmodo.com

Document Number D10100-V15
©2025 – SunModo Corp.

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 SunTurf Ground Mount 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 1.
- 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.

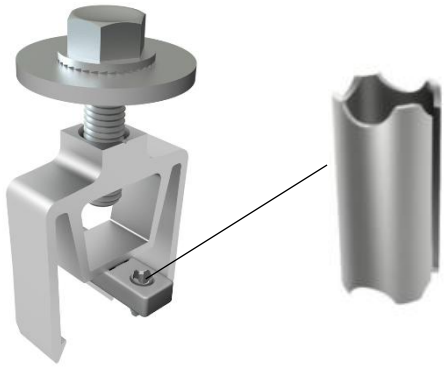
It is not possible for SunModo to be aware of all the possible job site situations that could cause an unsafe condition to exist. The installer of the ground system is responsible for reading these instructions and determining the safest way to install the ground system. These instructions are provided 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.

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.

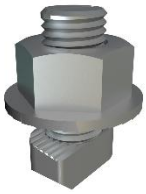
The SMR system components are designed in accordance with the National Electrical Code, ANSI/NFPA 70 and Model Building Codes. These code requirements cover rack mounting systems and clamping devices intended for use with PV module systems with a maximum system voltage of 1500V.

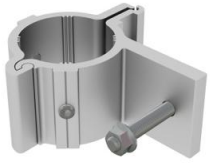
The patented SMR self-bonding system is for use with PV modules that have a maximum series fuse rating of 30A. This means the maximum number of PV modules in the SMR system is limited by the system voltage, so if a system has multiple inverters, the SunModo racking system can theoretically go on forever.

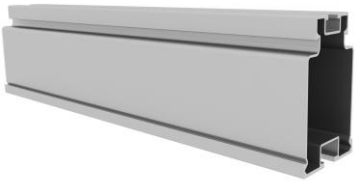
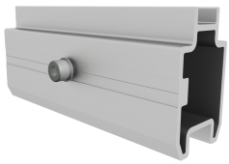
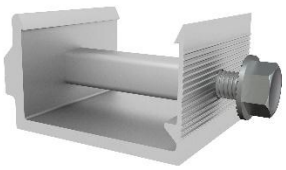


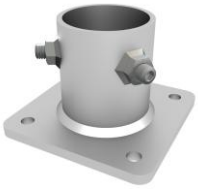
Mid Clamp with Bonding Pins

Ground Mount System Components

	SMR Mid Clamp	CLMP-MID-SMR-S CLMP-MID-SMR-B For single use only
	SMR End Clamp	CLMP-END-SMR-S CLMP-END-SMR-B
	SMR300 Bottom Clamp	CLMP-BOT-SMR300-S CLMP-BOT-SMR300-B
	Microinverter Mount	MLPE-SMR
	Grounding Lug	GRND-SMR For single use only

	2.5” Pipe U-Clamp	CLMP-U-25-SMR300
	2.5” Pipe Clamp	PIPECAP-25
	2.5” Swivel Pipe Clamp	PIPECAP-25-SWIVEL
	2” Pipe Clamp 2.5” Pipe Clamp	CLMP-PIPE-20 CLMP-PIPE-25
	2.5” Pipe Splice	SPLC-PIPE-25

	Diagonal Braces: HSS Tube Brace, 1.5 x 1.5 x .083min Wall	BRACE-TUBE-92 BRACE-TUBE-120
	SMR300 Rail	SMR300-174-M SMR300-174-M-US SMR300-212-M SMR300-212-M-US
	SMR300 Rail Splice	SPLC-SMR300
	SMR300 Rail End Cap	CAP-SMR300-B
	SMR300 L-Foot Adaptor	LFA-SMR300-S

	2” and 2.5” Galvanized Steel Pipe: 2” 12-Gauge HSS Hot Dip Galvanized Pipe or equivalent, 60” Long 2” 12-Gauge HSS Hot Dip Galvanized Pipe or equivalent, 120” Long 2.5” 12-Gauge HSS Hot Dip Galvanized Pipe or equivalent, 112” Long	 PIPE-20-60 PIPE-20-120 PIPE-25-112
	79” Helical Anchor	HELICAL-79
	63” and 80” Ground Screw With Set Screws	GRSCREW-63 GRSCREW-80
	2” Steel Base Plate	BASE-PIPE-20

List of Compliant PV Modules

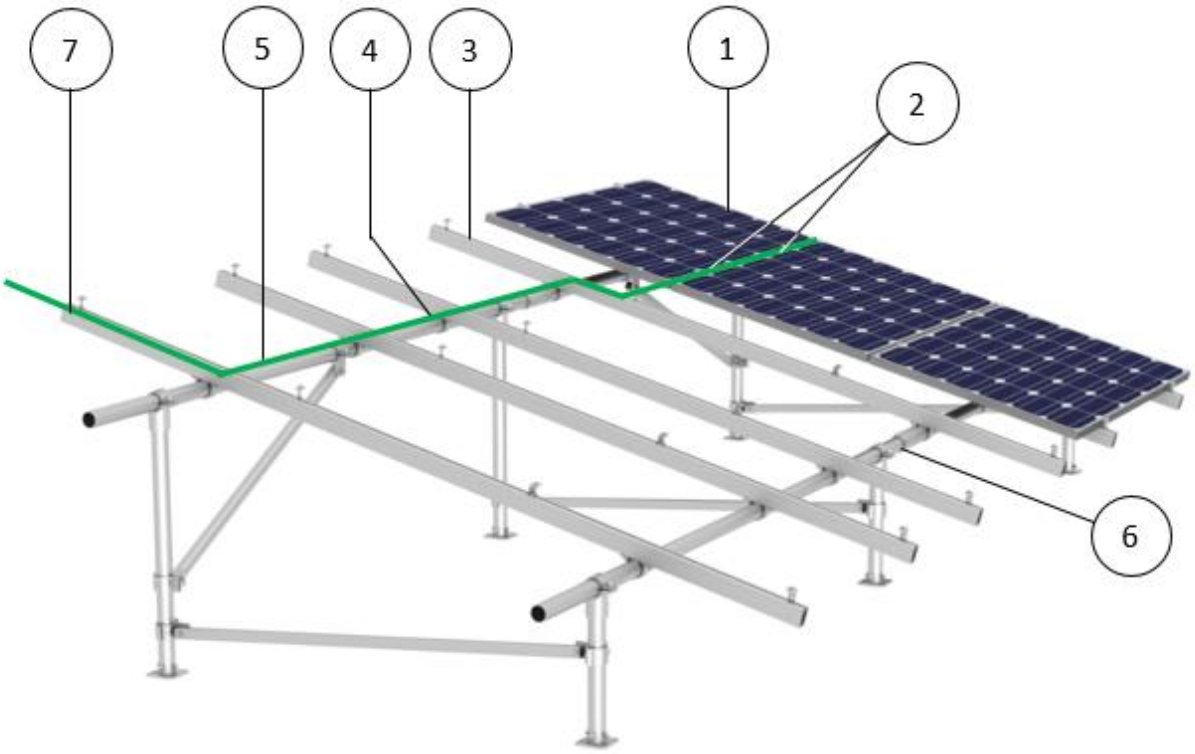
UL 2703 Qualified Modules for use with SunModo PV Racking Systems

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	CS3K-xxxMS, 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, JAM66D45-xxx/LB, JAM72S09-xxx/PR, JAP6 72-xxx/3BB, JAM72D00-xxx/PR, JAM72S09 -xxx/PR

Jinko	JKMxxx-60HL4, JKMxxx-60HL4-V, JKMxxx-72HL-V, JKMxxx-72HL4, JKMxxx-72HL4-V, JKMxxx-72L-V, JKMxxx-7RL3-TV, JKMxxxM-6RL3-B, JKMxxxM-60HBL, JKMxxxM-60HL, JKMxxxM-60L, JKMxxxM-72HL-TV, JKMxxxM-72HL-V, JKMxxxM-72HLM-TV, JKMxxxM-72HL4-BDVP, JKMxxxM-72HL4-TV, JKMxxxN-54HL4-B
Kyocera	KDxxxGX-LFB, KUxxx-6MCA, KDxxxGX-LFB2
LG	LGxxxA1C-A6, LGxxxM1C-A6, LGxxxM1K-A6, LGxxxN1C-A6, LGxxxN1C-E6, LGxxxN1C-G4, LGxxxN1C-N5, LGxxxN1K-A6, LGxxxN1K-B6, LGxxxN1K-E6, LGxxxN1K-G4, LGxxxN1K-V5, LGxxxN1T-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	IL5-72HBD-xxxM, IL8-66HGD-xxxM, 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, PSxxxM1-24/TH, PSxxxM1H-24/TH, PSxxxM1-24/TH
REC Solar	RECxxxNP, RECxxxTP2, RECxxxTP2 BLK2, RECxxxTP2S 72, RECxxxTP2SM 72 RECxxxNP2 BLACK, RECxxxNP3 BLACK, RECxxxAA BLACK, RECxxxTP4 BLACK, RECxxxAA PURE, RECxxxAA PURE 2, RECxxxAA PURE-R, RECxxxTP5
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 BK/BL/HC/HC+/HL/ML/NL/NT/NU/NX/QD
Sirius	ELNSM54M-HC-xxx, ELNSM54M-HC-BF-xxx, ELNSM54M-HC-LV-xxx, ELNSM60M-HC-xxx, ELNSM60M-HC-BF-xxx, ELNSM60M-HC-LV-xxx, ELNSM66M-HC-xxx, ELNSM66M-HC-BF-xxx, ELNSM66M-HC-LV-xxx
Solaria	PowerX-xxxR, PowerXT-xxxR-AC, PowerXT-xxxR-BX, PowerXT-xxxR-PX, PowerXT-xxxR-BD, PowerXT-xxxR-PD, PowerXT-xxxC-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, TSM-NE09RC.05
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. Rail
4. Pipe Clamp Kit with PVC Insulator
5. Horizontal Steel Pipe
6. Pipe Splice Kit (configuration dependent)
7. Grounding Lug

Fault Current Path

Note: All SunTurf metal structural components (Horizontal and Vertical Pipe, Pipe Splices, Post Caps, Pipe Clamps, Braces, Rail and Rail Splices) are electrically bonded together by design during the assembly of the racking.

Tools Required for Installation

Impact Driver	
Band Saw	
Adjustable Torque Wrench, 0 – 35 Nm	
Tape measure	
Chalk line or laser	
10mm (3/8”) 6-point Socket 13mm (1/2”) 6-point Socket 28mm (1-1/8”) 6-point Socket	
Anti-seize compound (Permatex 80071 or equivalent)	

Torque Values

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

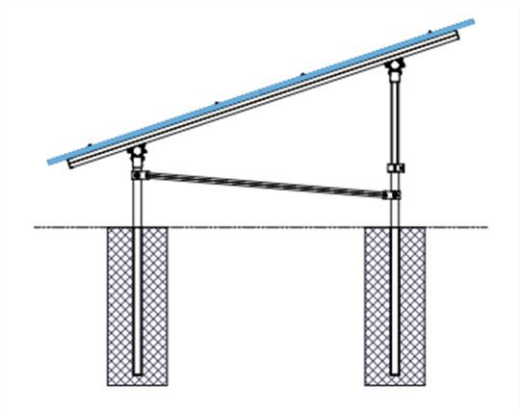
Hardware	Torque lbs.
SMR End/Mid Clamps	9.4 Nm to 10.2 Nm (6.9 ft-lbs to 7.5 ft-lbs)
SMR L-Foot Adaptor	13 Nm to 15 Nm (10 ft-lbs to 11 ft-lbs)
Ground Lug, Screw to secure Ground Wire	5.6 Nm (4.2 ft-lbs)
Ground Lug, Flange Nut	10.2 Nm (7.5 ft-lbs)
1/4-20 Bolts and Hex Flange Nuts	10.2 Nm (7.5 ft-lbs)
3/8-16 Bolts and Hex Flange Nuts	20.5 Nm (15 ft-lbs)
3/8-16 and M10 T-Bolts and Hex Flange Nuts	20.5 Nm (15 ft-lbs)
3/8-16 Setscrew with 3/16” Allen	27.2 Nm (20 ft-lbs)
1/2-13 Nuts and Bolst	27.2 Nm (20 ft-lbs)
M10 Hex Head Screws	43.39Nm (32 ft.-lbs)

Ground Mount Overview

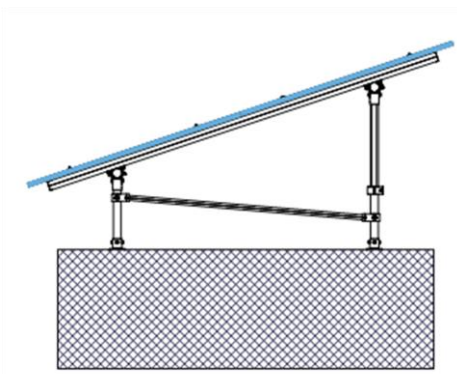
The Ground Mount system can be integrated with steel support for a scalable and simple ground mounted solution. Our unique drive-in earth anchors represent one of three choices for Ground Mounted Solar Arrays. Angles from 10º to 45º can easily be accommodated with the SunTurf racking system components. Portrait and landscape-oriented PV panels are easy to configure.

To prevent the galvanic reaction between dissimilar metals the PVC Insulator must be installed between the steel pipe and the aluminum rail.

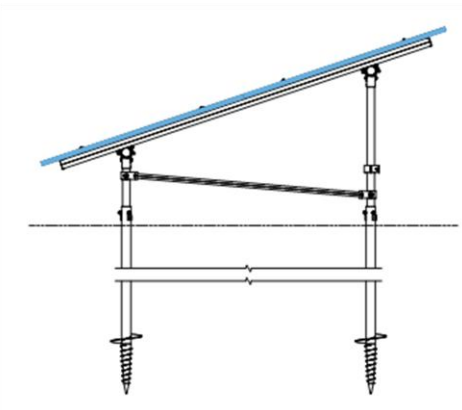
Post Ground Mount

The Concrete and Post mount showing typical configuration and dimensions with PV panels mounted at 20 degrees as viewed from the East.	

Ballasted Ground Mount

The Ballasted concrete form mount showing typical configuration and dimensions with PV panels mounted at 20 degrees as viewed from the East.	

Ground Screw/Helical Anchor Ground Mount

The Ground Anchor system showing typical configuration and dimensions with PV panels mounted at 20 degrees as viewed from the East.	

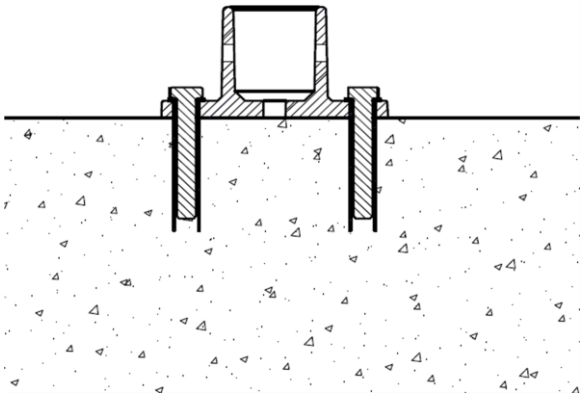
Installation Instructions:

Post Base Plate to Precast Concrete Block

There are many ways to attach structural members and fixtures to concrete, and the choice of anchoring system depends on a variety of factors. A Structural Engineer should specify the type of concrete fastener to be used.

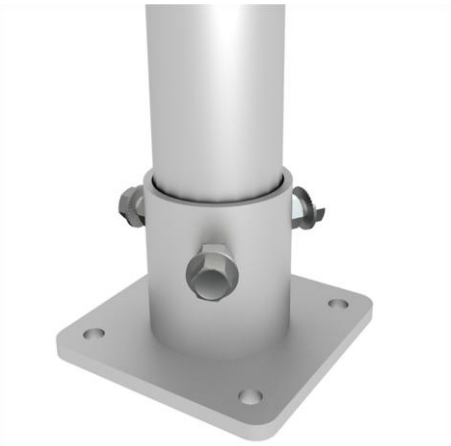
For new construction consult SunModo before starting your project.

Drill the holes in the concrete and follow the manufacturer's recommendation on the installation and torque to be used with a particular fastener type.



This cross section shows the mounting of a Post Base Plate to a precast concrete block.

Insert the Post into the Post Base and secure using the 3X M10 Screws provided. Use a 15mm socket driver and torque to 45 Nm (33.2 ft-lbs).

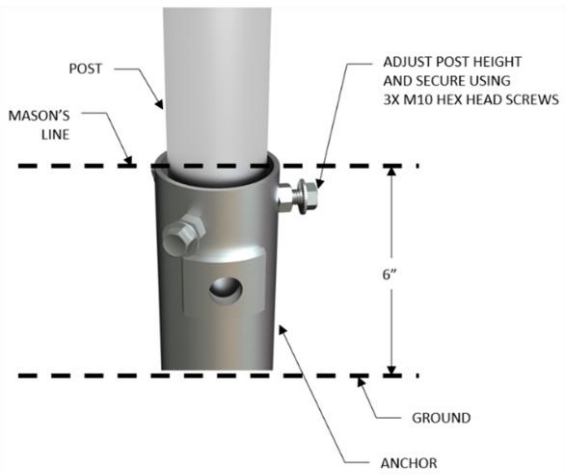


Helical Earth and Ground Screw Anchors Installation

Using a measuring tape and string line, determine anchor locations per SunModo layout drawing and mark locations on the ground with spray paint. Install anchors to the depth shown on drawing (approximately 6" of anchor should protrude from ground).

Starting at the high point moving laterally along the array, slide the front and rear vertical posts into the ground anchors until the top of the post is at the appropriate distance above ground level to provide the desired minimum leading-edge height. See the SunModo layout drawing for this dimension.

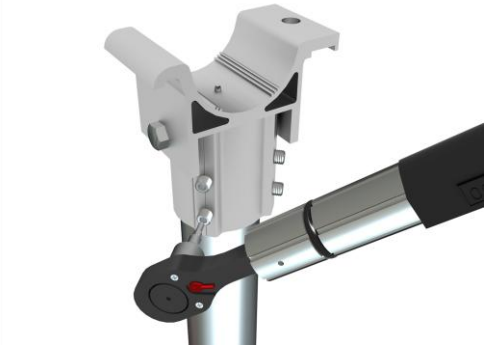
Secure using 3X M10 Screws. Stretch a string line with a level along the front and rear anchor lines and attach to a wooden stake with the string level. Slide subsequent front and rear posts into the ground anchors until their tops are level with the string line. Secure with 3X M10 Screws, using a 15mm socket driver and torque to 45 Nm (33.2 ft-lbs).



Pipe Cap to Post Attachment

Position the Pipe Cap on top of the Post and secure using the M10 Allen Screws provided.

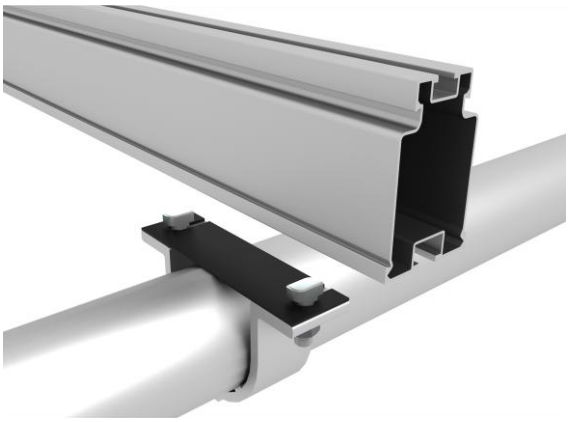
The Pipe Cap can be moved up and down approximately 2" to allow for leveling of the Pipe Cap. Torque to 20 ft. lbs. with a 5mm Allen head drive.



Horizontal Pipe to Pipe Cap Attachment

Lay the horizontal pipe into the saddle of the Pipe Cap assembly and position the top part of the Pipe Cap so that the mating grooves are properly aligned with the grooves on the bottom part of the Pipe Cap. Use the 1/2" Bolt & Nut to secure using 1/2” Flange Nuts. Torque to 20 ft. lbs. Note: Make sure the cantilever of the horizontal pipe at each end of the array does not exceed the maximum value listed on the SunModo layout drawing.	

Rail to Pipe Attachment

Attach the rail to the pipe using the Pipe U-Clamp Kit. Use the two supplied M10 T-Bolts and Flange Nuts to secure. Torque to 15 ft. lbs. To prevent galvanic reaction between dissimilar metals the PVC Insulator must be installed between the steel pipe and the aluminum rail.	

Pipe Clamp to Post Attachment

Where bracing is required as indicated on the SunModo layout drawing, a sliding Pipe Clamp is installed as shown. The sliding Pipe Clamp is secured with a 3/8-16 X 2” Hex Bolt and Flange Nut. Torque to 15 ft. lbs. Install the two Grounding Set Screws in the Pipe Clamp as shown. Using a 5mm hex driver torque to 10 ft. lbs.	

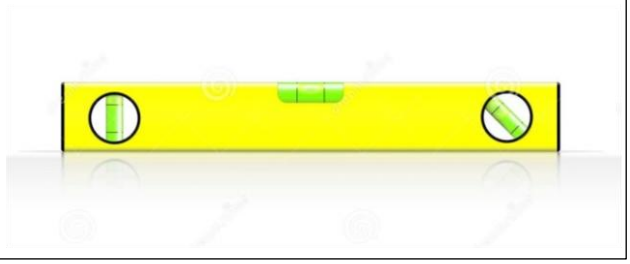
Pipe Clamp to Brace Attachment

Attach Brace to Pipe Clamp as shown. A single 3/8-16 X 3-1/2” Hex Bolt and Flange Nut are required. The Star Washer supplied with the kit must be installed under the head of the bolt as shown. Torque to 15 ft. lbs.	

Pipe to Pipe External Splice

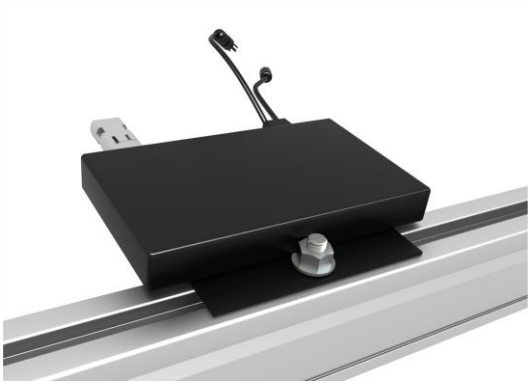
Where a splice is required for the horizontal Pipe, the splice should be inserted before the pipes are fastened in place. Slide the Pipe Splice onto the end of the horizontal Pipe.	
Complete the splice by sliding the adjacent horizontal Pipe into the Pipe Splice as shown. Install the two bonding Set Screws in the Pipe Clamp as shown. Using a 5mm hex driver torque to 20 ft. lbs.	

Rack Leveling

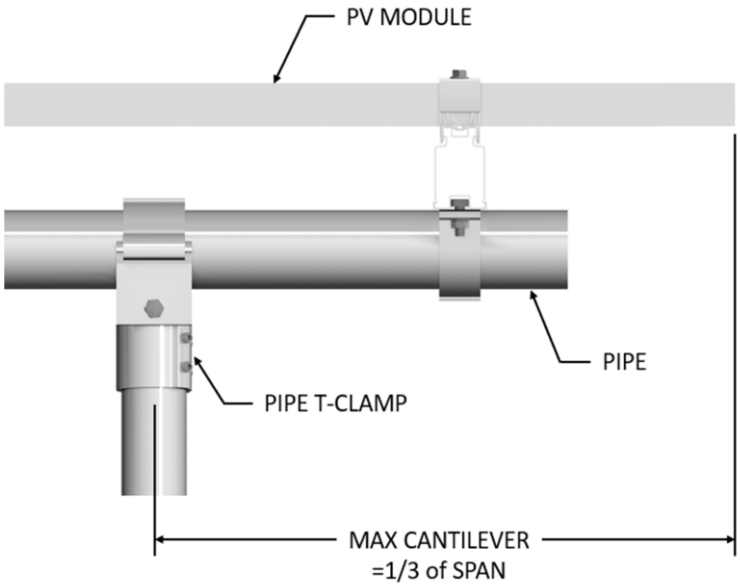
At this time during the installation, the spacing and leveling of the rack should be checked and adjusted as necessary.	

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 Overhang

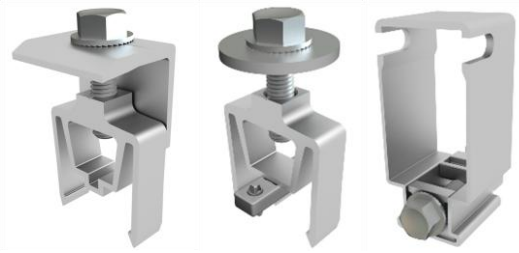
The combined maximum cantilever of the PV module and horizontal Pipe is 1/3 of the post span. See the SunModo layout drawing for this dimension. For installation of modules in Portrait orientation, ensure that module manufacturer allows clamping on the short sides of the module.	

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.

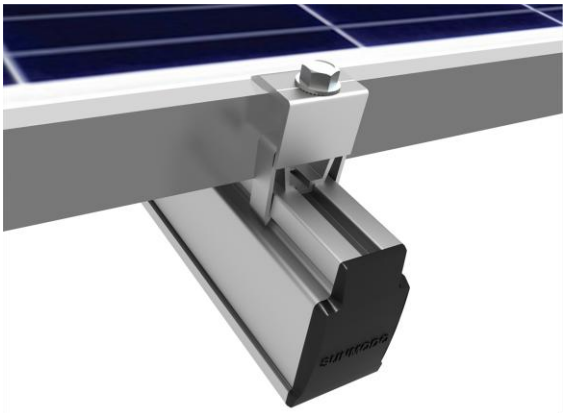


SMR End Clamp Attachment

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

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

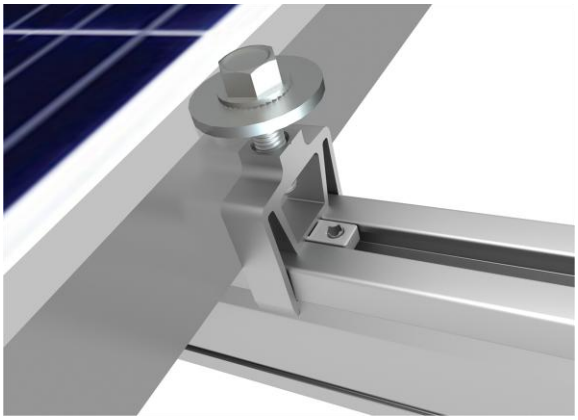
- Confirm that the hooks on the End Clamp are fully engaged with the hooks on the side of the Rail.
- Use your free hand to support the End Clamp against the module frame while tightening.
- Use a 13mm (1/2") hex socket and torque to 9.4 Nm (6.9 ft-lbs).



SMR Mid Clamp Attachment

Install the Mid Clamp on the Rail between PV modules.

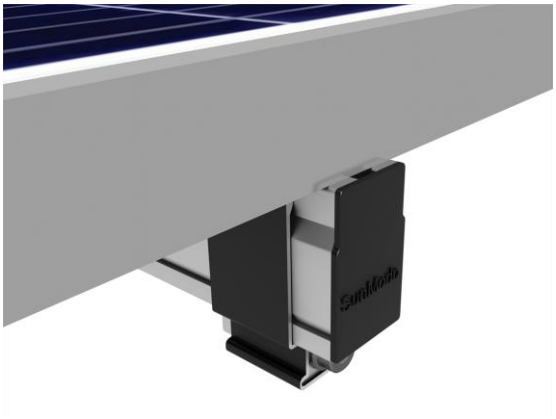
- Confirm that the hooks on the Mid Clamp are fully engaged with the hooks on the side of the Rail.
- Secure the PV panel frame to the Rail using the Mid Clamp; use a 13mm (1/2") hex socket and torque to 9.4 Nm (6.9 ft-lbs).



SMR300 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).



Ground Wire Attachment

The picture shows a single grounding lug mounted on one Rail and a #6 solid copper grounding wire connecting the Ground Lug to the building ground per NEC 690.47.

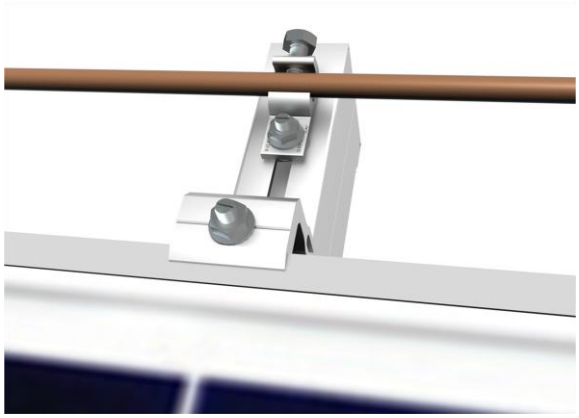
The self-bonding system is for use with PV modules that have a maximum series fuse rating of 30A.

Ground Lug detailed installation document D10003 is available from SunModo separately.

Ground Lug Installation

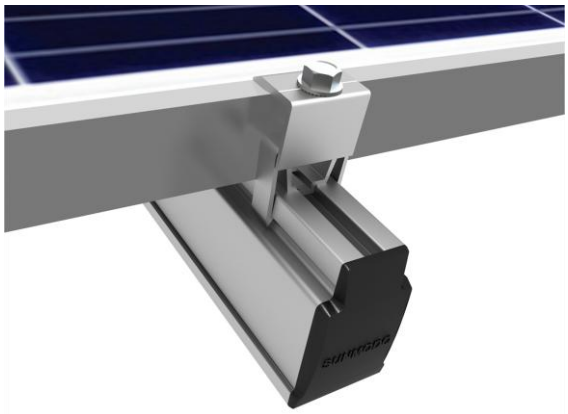
One Rail should have a Ground Lug for fastening the ground conductor to the array. The Ground Lug is mounted on the top side of the Rail using a T-Bolt, Grounding Spacer, and Flange Nut.

Ground Lug Alternate Installation:
Drill a hole on the side of the Rail large enough to accommodate the 6mm (1/4") T-Bolt. Install the Ground Lug to the side of Rail.



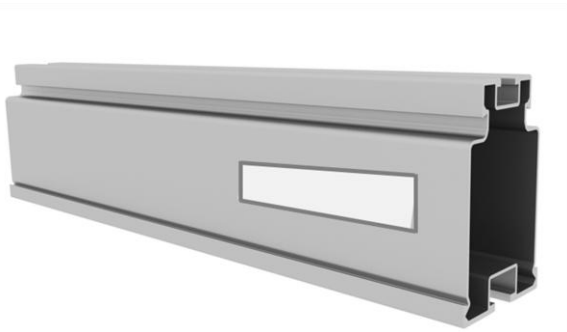
Rail End Covers

Rail End Covers can be attached to the mounting rails as shown.



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.