

SCI Solar Attachment Solutions Installation Instructions

1 Solar Connections – Attachment Solutions Materials and Connections:

- 1.1 The innovative products evaluated in this report are shown in **Figure 1** for SCI PowerMounts and **Figure 2** for SCI Standing Seam Clamps. See **Table 1** for dimensions.
- 1.2 SCI Solar Attachment Solutions are manufactured from 6061 T6 aluminum and are used to attach photovoltaic panel systems to roof systems.

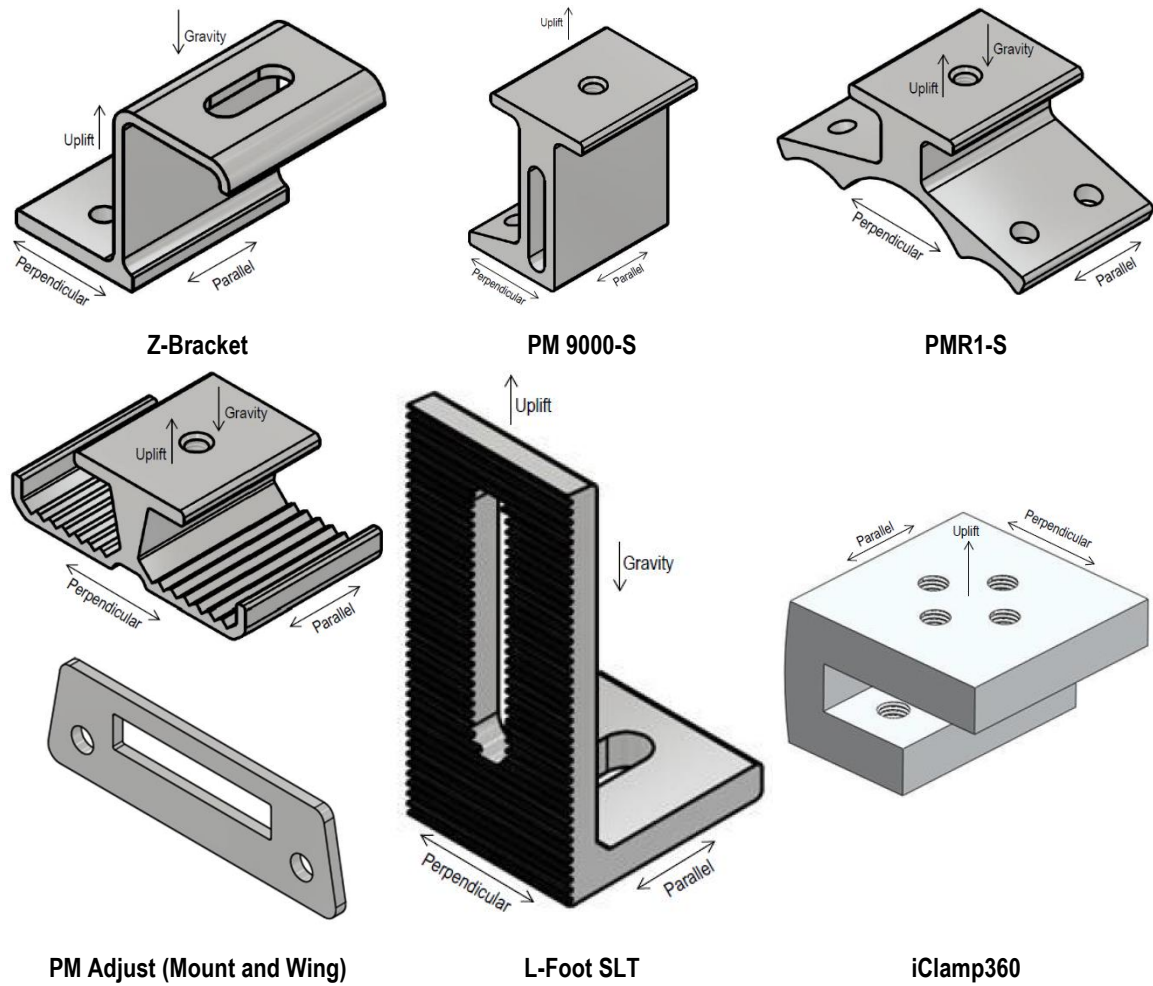
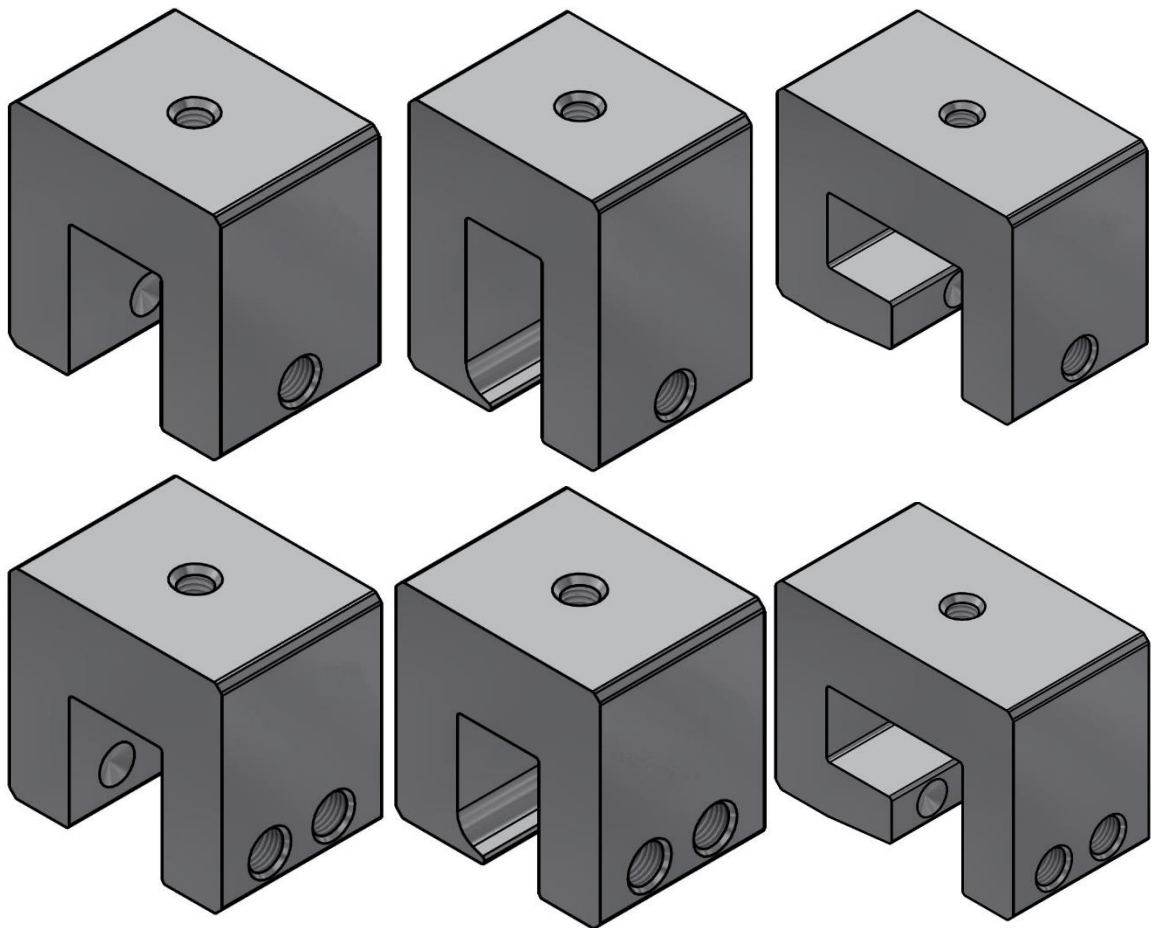


Figure 1. SCI PowerMounts



**PV Cube Standard
and PV Cube Mini**

**PV Cube KLOC
and PV Cube KLOC Mini**

PV Cube Wide

Figure 2. SCI Standing Seam Clamps

1.2.1 Overall product dimensions of the SCI Solar Attachment Solutions and their corresponding fastening methods are provided in **Table 1**.

1.2.1.1 All fasteners listed in **Table 1** are provided by SCI.

Table 1. SCI Solar Attachment Solutions Dimensions and Fastening Methods

SCI Products		Overall Product Dimensions (in)			Fastening Methods ¹
		Height	Width	Depth	
Z-Bracket		2.00	2.00	1.50	#14 x 2" Self-tapping Type-17, Type A, Dyna-Coat® Coated HWH Screw with EPDM washer
					#14 x 1½" T-5 Self-drilling, Fenderhead® Dyna-Coat® Coated HWH Screw with EPDM washer
PM 9000-S		2.50	2.00	1.50	#14 x 2" Self-tapping Type-17, Type A, Dyna-Coat Coated HWH Screw with EPDM washer
					#14 x 1½" T-5 Self-drilling, Fenderhead Dyna-Coat Coated HWH Screw with EPDM washer
PMR1-S		1.52	3.84	2.00	#14 x 7⁄8" T-1 Self-drilling, Stainless Steel Cap HWH Screw with EPDM washer
PM Adjust		1.25	3.45	2.00	#14 x 7⁄8" T-1 Self-drilling, Stainless Steel Cap HWH Screw with EPDM washer
L-Foot SLT		3.66	1.63	2.00	M8 (1.25" x 20 mm) Stainless Steel Flange Bolt
iClamp360	iClamp360 M8	1.65	2.57	2.59	M8 (1.25" x 25 mm) Stainless Steel Flange Bolt
	iClamp360 Cup Point				3⁄8"-24 x 1" Stainless Steel Cup Point Set Screw
PV Cube Standard		2.00	2.00	1.50	3⁄8"-24 x 1½" Stainless Steel Silver Bullet Set Screw
PV Cube Mini		1.88	2.00	1.50	3⁄8"-24 x 1½" Stainless Steel Silver Bullet Set Screw
PV Cube KLOC		2.30	1.88	1.50	3⁄8"-24 x 1½" Stainless Steel Silver Bullet Set Screw
PV Cube KLOC Mini		1.88	1.88	1.50	3⁄8"-24 x 1½" Stainless Steel Silver Bullet Set Screw
PV Cube Wide		2.00	2.63	1.50	3⁄8"-24 x 1½" Stainless Steel Silver Bullet Set Screw
SI: 1 in = 25.4 mm 1. Fasteners are shown in Figure 3 .					



**#14 x 2" Self-tapping Type-17, Type A,
Dyna-Coat Coated HWH Screw with EPDM Washer**



**#14 x 1 1/2" T-5 Self-drilling, Fenderhead
Dyna-Coat Coated HWH Screw with EPDM Washer**



**#14 x 7/8" T-1 Self-drilling, Stainless Steel Cap
HWH Screw with EPDM Washer**



**L-Foot: M8 (1.25" x 20 mm) Stainless Steel Flange Bolt
iClamp360 M8: M8 (1.25" x 25 mm)
Stainless Steel Flange Bolt**



3/8"-24 x 1" Stainless Steel Cup Point Set Screw



3/8"-24 x 1 1/2" Stainless Steel Silver Bullet Set Screw

Figure 3. Fasteners for use with SCI Solar Attachment Solutions

- 1.3 Z-Bracket and PM 9000-S mounts are designed for use on wood roof framing, wood roof sheathing, cold-formed steel roof framing, or on roof systems utilizing metal roof panels.
 - 1.3.1 Ethylene Propylene Diene Monomer (EPDM) gaskets are pre-applied to the bottom-side of the base of the Z-Brackets and PM 9000-S mounts.
- 1.4 PMR1-S mounts are designed for use on roof systems utilizing S-style corrugated metal roof panels.
 - 1.4.1 EPDM gaskets are pre-applied bottom-side of the outer wings.
- 1.5 PM Adjust mounts are designed for use on roof systems utilizing corrugated metal roof panels.
 - 1.5.1 The loose wing component of the PM Adjust provides the capability of adjusting to any corrugation angle or width from 3/4" to 3" wide.
 - 1.5.2 EPDM gaskets are pre-applied to the loose wing components.
- 1.6 L-Foot SLT is designed to be installed onto any SCI PowerMounts or SCI PV Cube Standing Seam Clamps.
- 1.7 iClamp360 is designed to be installed onto steel beams or steel channels.
 - 1.7.1 Thickness of the flanges of the steel beams or steel channels shall be 3/8" thick.
- 1.8 SCI PV Cube Standing Seam Clamps are designed for use on roof systems utilizing standing seam metal roof panels.
 - 1.8.1 Compatible metal panel seams with SCI PV Cube Standing Seam Clamps are shown in **Figure 4** through **Figure 8**.

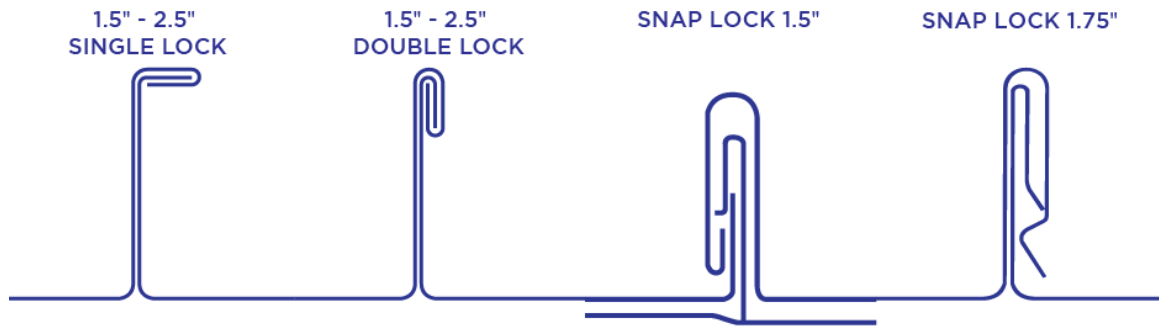


Figure 4. Compatible Panel Seams – PV Cube Standard

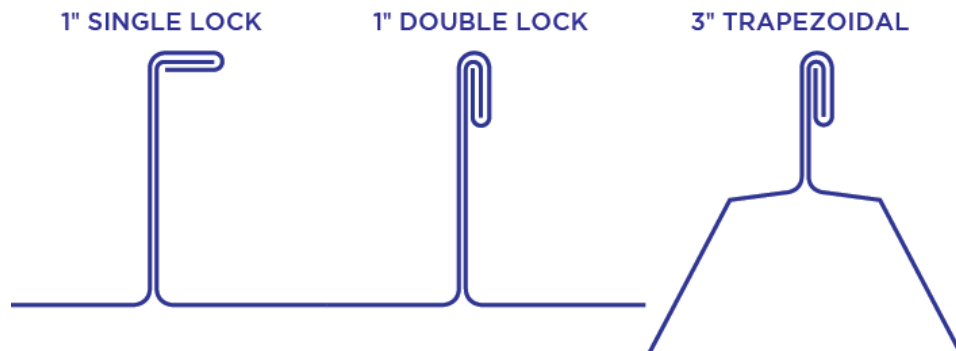


Figure 5. Compatible Panel Seams – PV Cube Mini

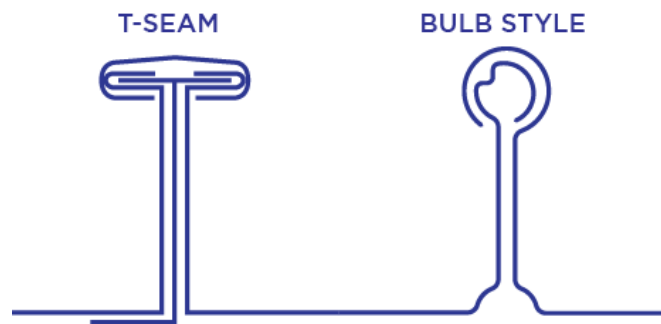


Figure 6. Compatible Panel Seams – PV Cube Wide



Figure 7. Compatible Panel Seams – PV Cube KLOC

NAIL STRIP 1"



Figure 8. Compatible Panel Seams – PV Cube KLOC Mini

1.9 Allowable axial and lateral loads for SCI PowerMounts are provided in **Table 2**.

Table 2. SCI PowerMount Connection Allowable Capacities

Product	Substrate Type ^{1,2,3,4,5,6}	Fastener	Allowable (ASD) Connection Capacity (lb)			
			Uplift	Gravity	Lateral	
			Normal	Normal	Parallel	Perpendicular
Z-Bracket	Sawn Lumber	#14 x 2" Self-tapping Type-17, Type A, Dyna-Coat Coated HWH Screw with EPDM washer	425	310	255	50
	7/16" OSB		150	110	140	40
	20-gauge CFS Stud	#14 x 1 1/2" T-5 Self-drilling, Fenderhead Dyna-Coat Coated HWH Screw with EPDM washer	200	300	105	40
	22-gauge Steel Deck		215	360	90	35
PM 9000-S	Sawn Lumber	#14 x 2" Self-tapping Type-17, Type A, Dyna-Coat Coated HWH Screw with EPDM washer	615	See Table 2 Note 9	225	50
	7/16" OSB		145		105	40
	20-gauge CFS Stud	#14 x 1 1/2" T-5 Self-drilling, Fenderhead Dyna-Coat Coated HWH Screw with EPDM washer	200		75	20
	22-gauge Steel Deck		170		40	15
PMR1-S	26-gauge Corrugated Metal Roof Panel	#14 x 7/8" T-1 Self-drilling, Stainless Steel Cap HWH Screw with EPDM washer	495	580	445	600
PM Adjust	26-gauge Corrugated Metal Roof Panel	#14 x 7/8" T-1 Self-drilling, Stainless Steel Cap HWH Screw with EPDM washer	390	655	435	110
L-Foot SLT ¹	1/4" Steel Plate	M8 (1.25" x 20 mm) Stainless Steel Flange Bolt	345	490	365	185
iClamp360 ^{7,8}	3/8" Hot Dipped Galvanized Steel Plate	M8 (1.25" x 25 mm) Stainless Steel Flange Bolt	1,850	1,850	1,040	990
		3/8" - 24 x 1" Stainless Steel Cup Point Set Screw	2,245	2,245	1,250	1,600

SI: 1 in = 25.4 mm, 1 ft = 0.305 m, 1 lb = 4.45 N, 1 lb-in = 113 N-mm

- Sawn lumber shall have a minimum published specific gravity of 0.42.
- CFS studs shall have a minimum yield strength of 33 ksi.
- The base metal of the 22-gauge corrugated steel deck shall be minimum ASTM A653 SS Grade 40.
- The base metal of the 26-gauge corrugated steel deck shall be minimum ASTM A1008 SS Grade 60.
- The base metal of the 26-gauge S-style corrugated steel deck shall be minimum ASTM A1008 SS Grade 80.
- Steel plates shall conform to ASTM A123.
- iClamp360 mounts must be used as multiple mounting points in alternating orientations in the assembly.
- Installed torque requirement for the L-Foot SLT and iClamp360 shall be in accordance with the manufacturer installation instructions.
- The allowable gravity load is controlled by substrate. The substrate and roof structure shall be verified by an RDP.

1.10 Allowable axial and lateral loads for SCI PV Cube Standing Seam Clamps are provided in **Table 3**.

Table 3. SCI PV Cube Connection Allowable Capacities

Product	Substrate Type	Fastener ¹	Allowable (ASD) Connection Capacity ² (lb)	
			Uplift	Lateral
				Parallel
PV Cube Standard	22-gauge Steel Deck	2 Set Screw	705	935
	24-gauge Steel Deck		500	585
	0.032 Aluminum		435	800
PV Cube Mini	22-gauge Steel Deck	1 Set Screw	465	400
	24-gauge Steel Deck		375	420
	26-gauge Steel Deck		375	265
PV Cube KLOC	24-gauge Steel Deck	2 Set Screw	610	540
PV Cube KLOC Mini	26-gauge Steel Deck	1 Set Screw	375	265
		2 Set Screw	535	540
PV Cube Wide	22-gauge Steel Deck	1 Set Screw	475	495
		2 Set Screw	590	610
	24-gauge Steel Deck	1 Set Screw	480	510
		2 Set Screw	560	625
	0.032 Aluminum	1 Set Screw	335	465
		2 Set Screw	640	800
SI: 1 in = 25.4 mm, 1 ft = 0.305 m, 1 lb = 4.45 N, 1 lb-in = 113 N-mm				
1. Installed torque requirement shall be in accordance with the manufacturer installation instructions.				
2. Applicable to all of the following PV Cube Standing Seam Clamps: PV Cube Standard, PV Cube Mini, PV Cube KLOC, PV Cube KLOC Mini, PV Cube Wide				

2 Installation

2.1 Installation Procedure

2.1.1 General:

- 2.1.1.1 Wipe away any excess dirt and oil from the surface of the roof panel.
- 2.1.1.2 Measure the distance from the eave to the first row and use a string line over the roof panel seams to establish a straight guideline for installation.
- 2.1.1.3 Verify that the SCI Mounts are secure, straight, and level after every installation. Repeat for remaining clamps per design (e.g., spacing, layout).
- 2.1.1.4 Do not over-drive or over-tighten the fasteners. In the case where a fastener is stripped, remove and replace with a similar fastener, but of a larger diameter.
 - 2.1.1.4.1 Contact Solar Connections for more information.

2.1.2 PV Cubes:

- 2.1.2.1 Align the standing seam PV Cube on the seam, depending on the applicable seam profile.
- 2.1.2.2 Install the SCI Stainless Steel Silver Bullet™ Set Screws and make sure the torque is verified with a calibrated torque wrench within the recommended guidelines set forth by the manufacturer.
 - 2.1.2.2.1 Contact Solar Connections for the recommended torque requirements of any metal gauge and/or material not listed in **Table 3**

2.1.3 Z-Bracket:

- 2.1.3.1 Align the Z-Bracket to the string line and place onto the flat locations of the panel or the valley of the metal roof panel system application.
- 2.1.3.2 For wood substrates, secure the Z-Bracket by installing the supplied #14 x 2" Self-tapping Type-17, Type A, Dyna-Coat Coated HWH Screw with EPDM washer through the pre-punched holes and into the metal roof panel and roof decking or framing.
- 2.1.3.3 For metal substrates, secure the Z-Bracket by installing the supplied #14 x 1½" T-5 Self-drilling, Fenderhead Dyna-Coat Coated HWH Screw with EPDM washer through the pre-punched holes and into the metal roof panel and roof decking or framing.
- 2.1.4 *PM 9000-S:*
 - 2.1.4.1 Align the PM 9000-S to the string line and place onto the flat locations of the panel or the valley of the metal roof panel system application.
 - 2.1.4.2 For wood substrates, secure the PM 9000-S by installing the supplied 14 x 2" Self-tapping Type-17, Type A, Dyna-Coat Coated HWH Screw with EPDM washer through the pre-punched holes and into the metal roof panel and roof decking or framing.
 - 2.1.4.3 For metal substrates, secure the PM 9000-S by installing the supplied #14 x 1½" T-5 Self-drilling, Fenderhead Dyna-Coat Coated HWH Screw with EPDM washer through the pre-punched holes and into the metal roof panel and roof decking or framing.
- 2.1.5 *PM Adjust:*
 - 2.1.5.1 Align the PM Adjust to the string line and place on the roof panel seam/corrugation.
 - 2.1.5.2 Slide the PM Adjust wing component onto the main body while keeping the PM Adjust centered on the panel. Ensure that the wing is as far over and down as possible, and firmly press the wing against the panel seam/corrugation prior to fastening.
 - 2.1.5.3 While holding the wing in-place, install the supplied self-drilling, gasketed, stainless steel capped HWH fastener through the pre-punched holes on the wing component and into the metal roof panel seam/corrugation. Repeat for the other side.
- 2.1.6 *PMR1-S:*
 - 2.1.6.1 Align the PMR1-S to the string line and place on the roof panel seam.
 - 2.1.6.2 Secure the PMR1-S by installing the supplied self-drilling, gasketed, stainless steel capped HWH fastener through the pre-punched holes on the wings and into the metal roof panel seam/corrugation.
- 2.1.7 *L-Foot SLT:*
 - 2.1.7.1 Installed L-Foot SLT onto SCI PV Cubes or SCI PowerMounts using the provided M8 stainless steel flange bolt.
- 2.1.8 *iClamp360:*
 - 2.1.8.1 Slide the iClamp360 over the edge of ¾" thick steel.
 - 2.1.8.2 Install the provided fasteners, (e.g., M8 (1.25" x 25 mm) Stainless Steel Flange Bolt or ¾"-24 x 1" stainless steel cup point set screw) to the specified torque rating in accordance with manufacturer installation instructions.