SolFX Solar Strut Mount Assembly Guide

Table of Contents

SolFX Solar Strut Mount is a code compliant residential mounting system designed to be used with common strut channels.

SolFXSolar.com

Conforms to UL STD 2703 Standard for Safety First Edition: Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels. Scope of Evaluation includes bonding, grounding, mechanical loading.
Solar Strut mount is a rail only system, roof attachments are provided by other.

System Bonding

- Max Overcurrent Protective Device (OCPD) Rating: 30A
- This racking system may be used to ground and/or mount a PV module complying with UL 1703 or UL 61730 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.
- Module removal is not presented as a frequently expected occurrence and will not be required as part of routine maintenance.
- Module removal may disrupt the bonding path and could introduce the risk of electric shock. Additional steps may be required to maintain the bonding path. Modules should only be removed by qualified persons in compliance with the instructions in this manual.

CLASS A SYSTEM FIRE RATING PER UL 2703

• Any Roof Slope with Module Types 1 Allowed with Steep slope roofs. Any module-to-roof gap is permitted, with no fire skirt required.
Solar Strut Mount is to be installed over a fire-resistant roof covering rated for the application in Portrait orientation.
• Class A rated PV systems can be installed on Class A, B, and C roofs without affecting the roof fire rating

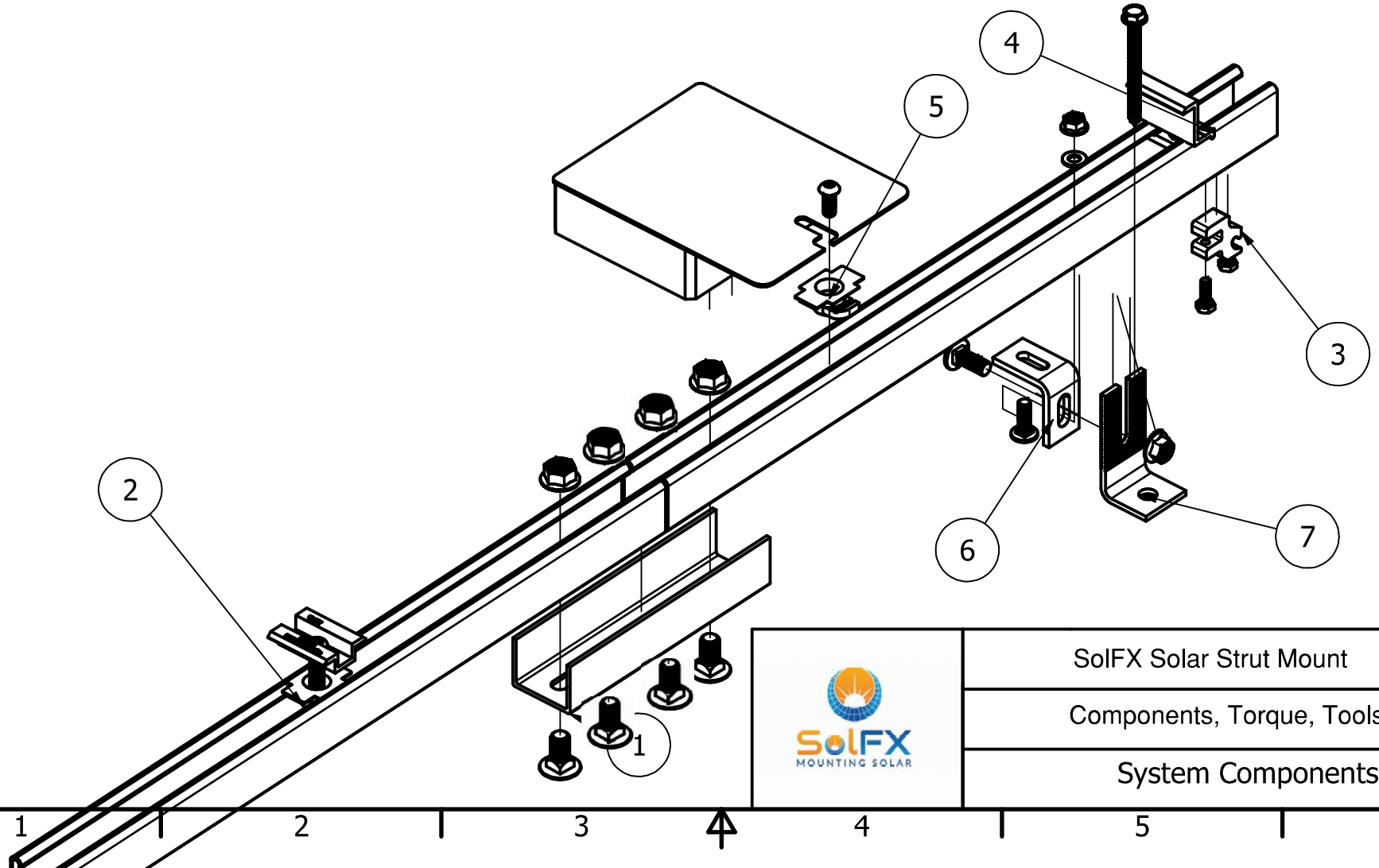
Structural Certification

• System Design Load Rating evaluated to UL2703: 10lb/ft² positive load (downward force), 10lb/ft² negative load (upward force), and 5 lb/ft² down-slope load (shear load).
• System structural capacity including spans and cantilevers are defined by PE stamped certification letters. See SolFX Solar Strut Mount span charts for detailed information.
Module Orientation: Portrait or Landscape
• Max Module Size: 27.8 ft²
See UL certification page for more details.

General Safety

The Solar Strut Mount System and these instructions are intended for use by qualified personnel. Qualified personnel are those who have skills, knowledge, and training in the installation of photovoltaic mounting systems necessary to follow these instructions to safely use the required tools and to conduct the required procedures.
Compliance with health and safety regulations, accident prevention guidelines and applicable standards are required.
The installer shall comply with all applicable local, state, and national building codes, including periodic reinspection 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.

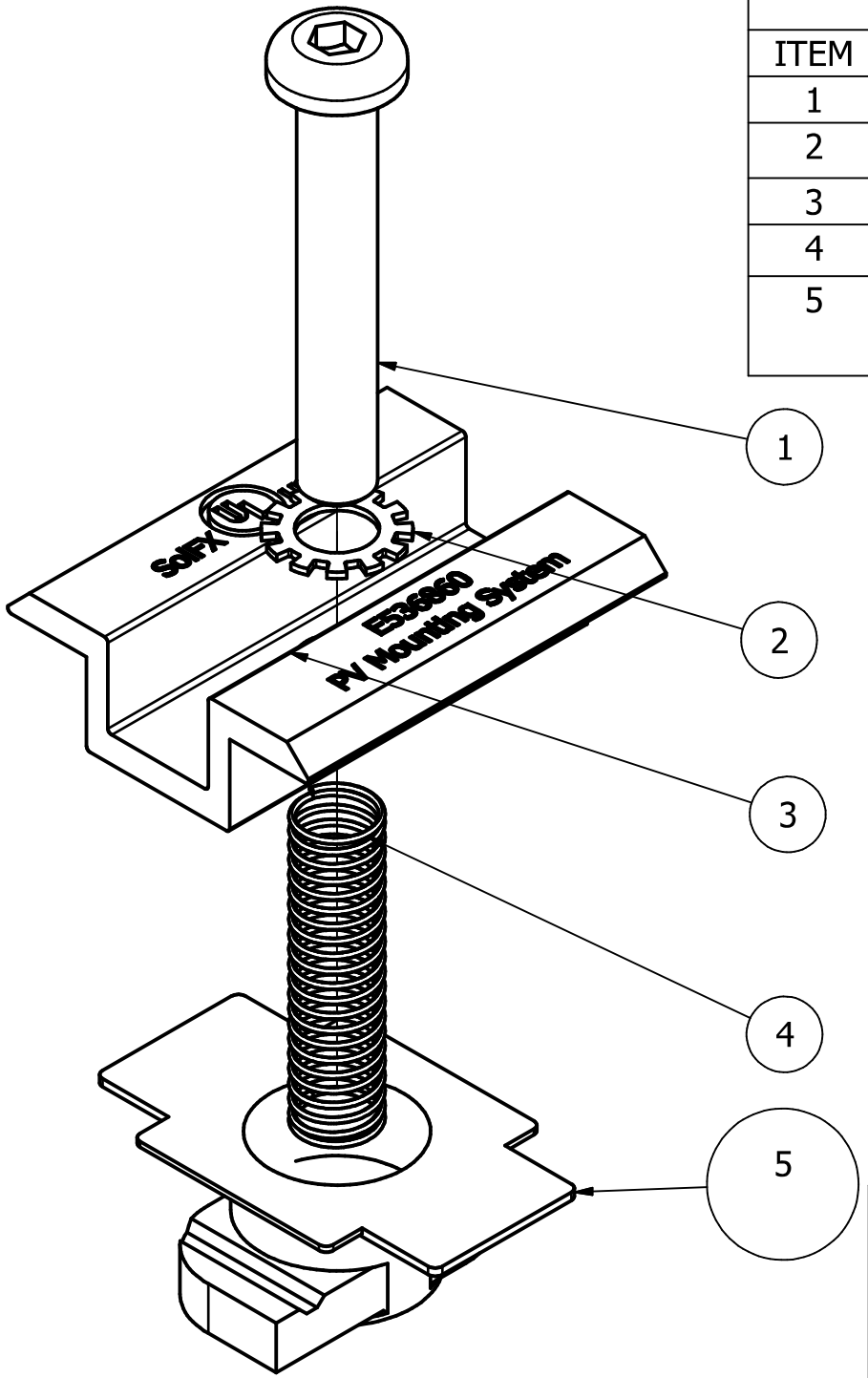
SolFX SOLAR STRUT MOUNT COMPONENTS				
ITEM	PART NUMBER	DESCRIPTION	TOOL	TORQUE
1	RC200-00-SolFX	RAIL CONNECTOR	5/8" OR 15mm SOCKET	25 ft-llbs
2	MC-U-BLK-00-SolFX	MID CLAMP 30-40MM	3/16" OR 5mm ALLEN	15 ft-lbas
3	IlSCO SGB-5	GROUNDING LUG	7/16" SOCKET	35in-lbs and 75 in-lbs
4	EC-35/40-BLK-00-SolFX	35MM OR 40MM END CLAMP	3/16" OR 5mm ALLEN	15-ft-lbs
5	MLM-M8-00-SolFX	MLPE MOUNT	3/16" OR 5mm ALLEN	15 ft-lbs
6	LA-U-SS-00-SolFX	L FOOT TO STRUT BRACKET	15mm AND 13mm SOCKET	25 ft-lbs and 20 ft-lbs
7	LF-U-SS-00-SOLFX	L FOOT ROOF ATTACHMENT	13mm SOCKET	Until seated



SolFX Solar Strut Mount

Components, Torque, Tools

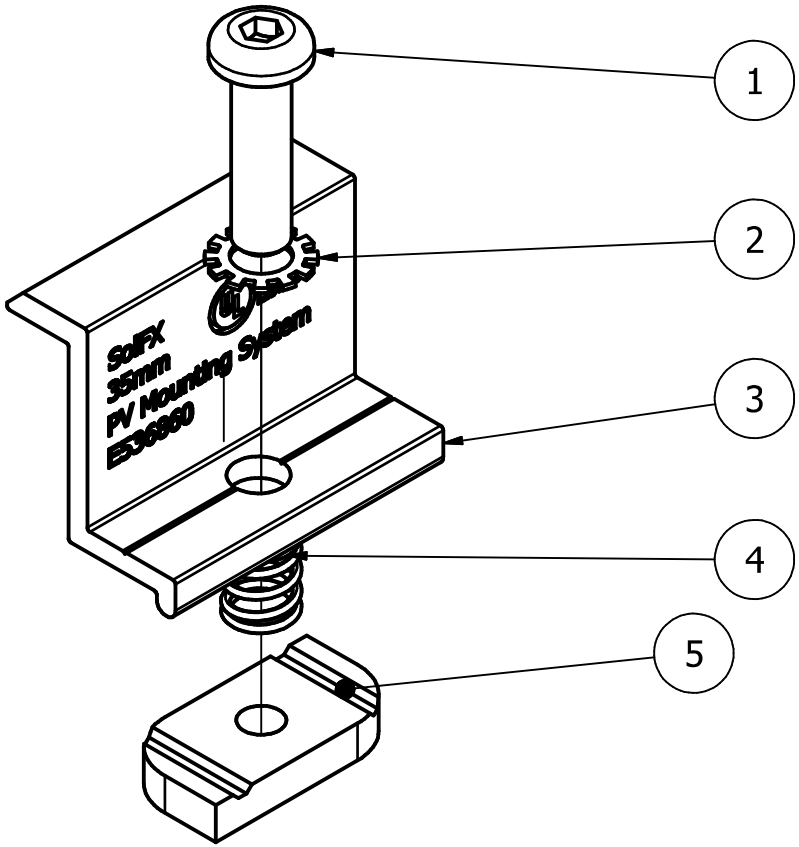
System Components



SolFX Mid Clamp Black BOM			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	M8x55-BH-00-SolFX	M8x55mm button head
2	1	SWA8-SS-00-SolFX	Toothed Lock Washer
3	1	MCT-BLK-00-SolFX	SolFX mid clamp top Black
4	1	MCS-00-SolFX	Mid Clamp Spring
5	1	SNM8-ZN-00-SolFX	M8 Slot Nut

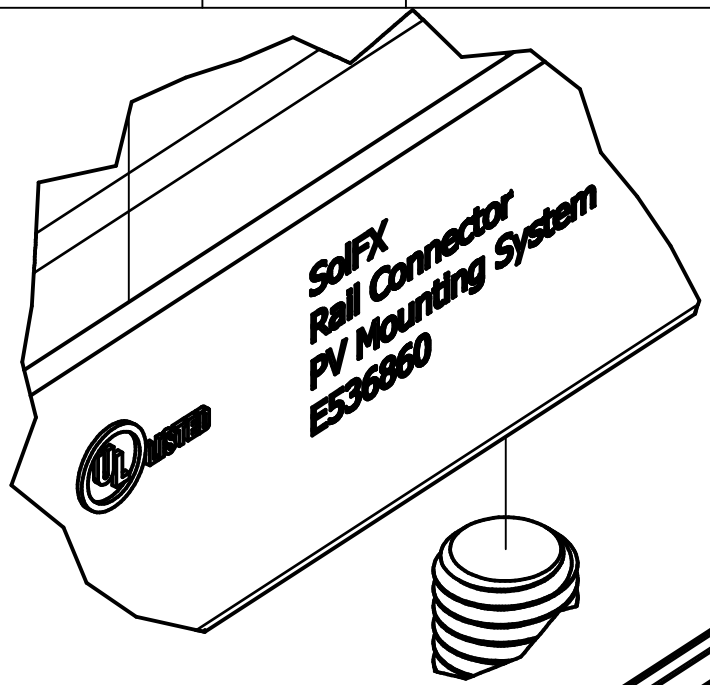
Rev A	Mass N/A	Date 5/25/2023
SolFX Mid Clamp Black		
MC-BLK-U-SolFX BOM		

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	M8x25-BH-BLK-00-SolFX	25mm M8 button head
2	1	SWA8-SS-00-SolFX	Toothed Lock Washer
3	1	ECT-35/40-BLK-00-SolFX	35/40mm End Clamp top
4	1	ECS-00-SolFX	End Clamp Spring
5	1	SNM8-ZN-00-SolFX	M8 Slot Nut



SolFX MOUNTING SOLAR	Rev	Mass N/A / Date 7/3/2023
	SolFX 35 and 40mm End Clamp	
	EC-BLK-35-40-SolFX Components	

PARTS LIST		
ITEM	QTY	PART NUMBER
1	2	1-5/8" Strut Channel
2	1	RC200-00-SolFX
3	4	M10 X 25 Carriage Bolt
4	4	M10 Flange nut

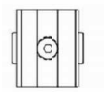


A (3:2)

SolFX SOLAR STRUT MOUNT

RC200 Components and Hardware

Rail connector compnents



Bonding Mid Clamp

Torque: 15 ft-lb

End Clamp

Torque: 15 ft-lb

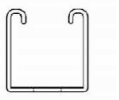
Rail Connector

Torque: 25 ft-lb

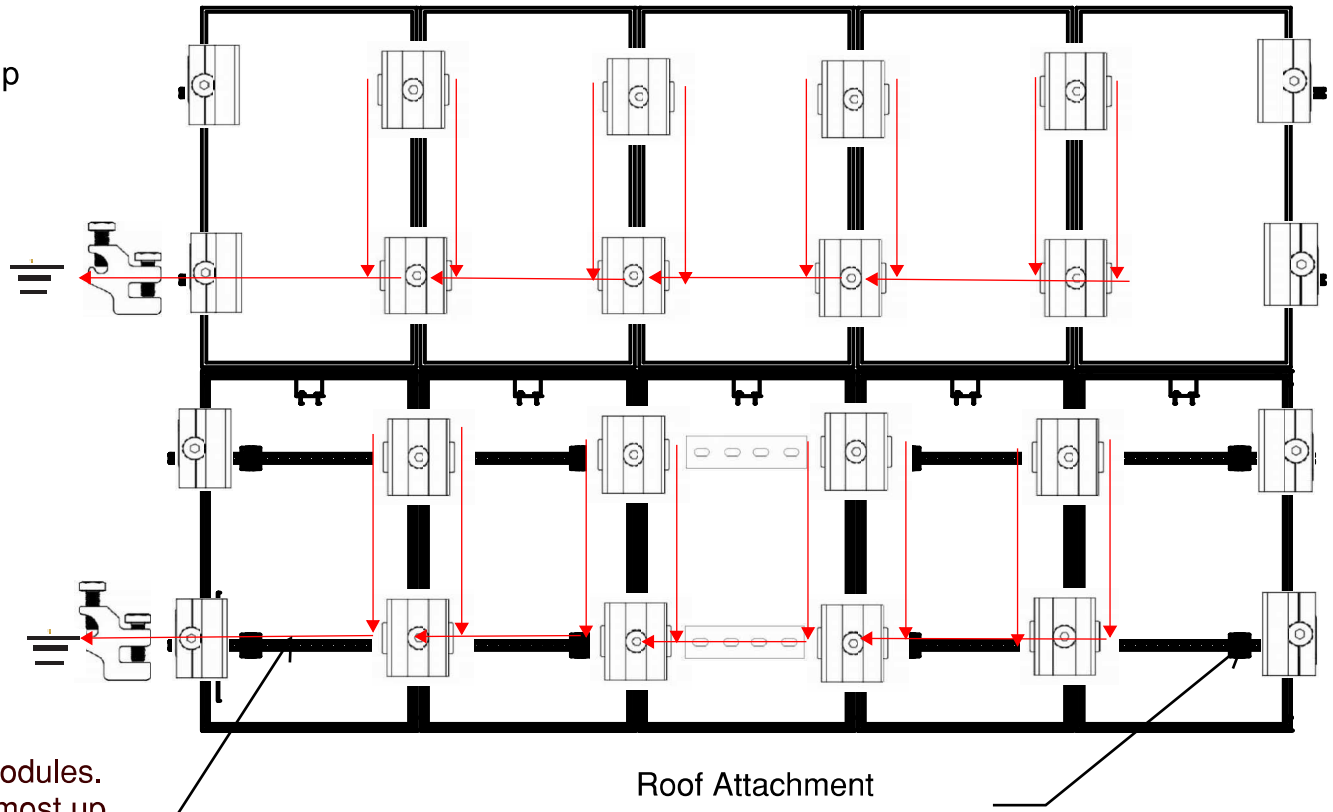
ILSCO SGB-5

Torque: 35 in-lb

One Ground lug per row of modules.
4-10 AWG: Consult NEC for most up to date Conductor requirements.



1 5/8" Strut Channel



Roof Attachment

SolFX Solar Strut Mount, when properly assembled and installed, provides an integrated electrical bonding path, ensuring that all exposed conductive parts and the PV module frames are electrically connected. The Solar Strut Mount employs a number of features to ensure reliable electrical connectivity.

* Components not to scale. See individual component assembly instructions.

Bond Path

Configuration secured by only End Clamps does not have means to bond/ground PV module.

SolFX Solar Strut Mount is approved for bonding with Unistrut P1000T, P1000SL, P1000HS, and P1000H3 Channels with Pre Galvanized, Hot Dipped Galvanized, and Defender coatings

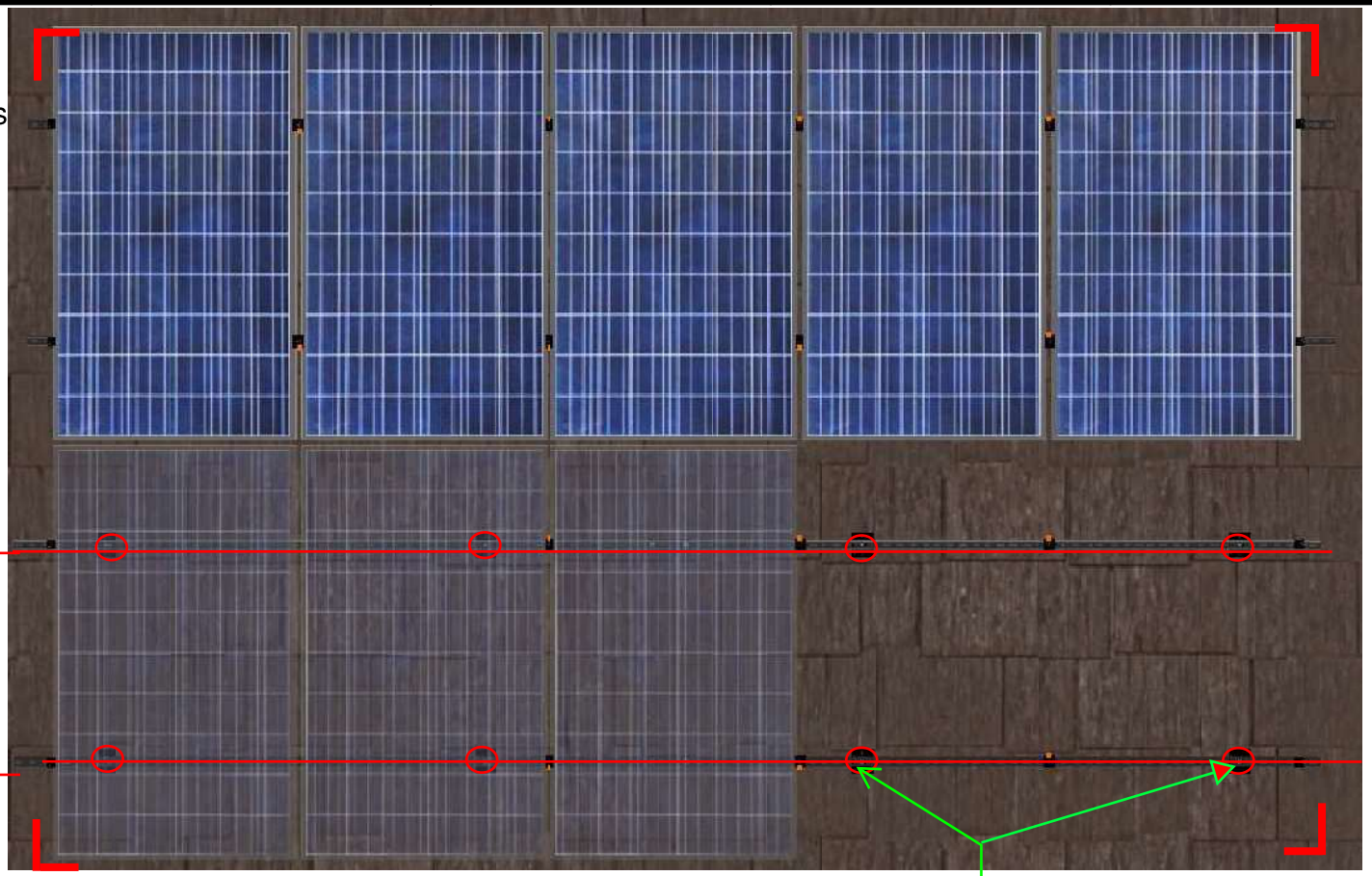
SolFX MOUNTING SOLAR

SolFX Solar Strut Mount

Ground Path Details

Safety First: Ensure you have all necessary PPE and secure yourself with a harness if the roof is steep.

Inspection: Check the roof condition. It should be in good shape without any significant damage or wear.



Using chalk or crayon, delineate the corners of the modules along the outer edge of the array per system design. When defining the array footprint, account for an additional ¾" inches to accommodate mid-clamp gaps at each module intersection, and an additional ¼" to ¾" inches between separate rows of modules. Mark the rail locations on both sides of the array in accordance with the module manufacturer's specified clamping zones. Next, draw chalk lines between the rail marks to ensure the attachments are installed in a straight line across the roof. Mark the attachment points along the chalk line, adhering to the specified maximum attachment spacing and rail cantilever requirements on SolFX Solar Strut Mount Span Charts.
Ensure marks are centered on rafter for Attachments utilizing a Lag bolt.

Preliminary Step

SolFX MOUNTING SOLAR

Roof Layout Guidelines

Design layout

Locate attachment points and rafters

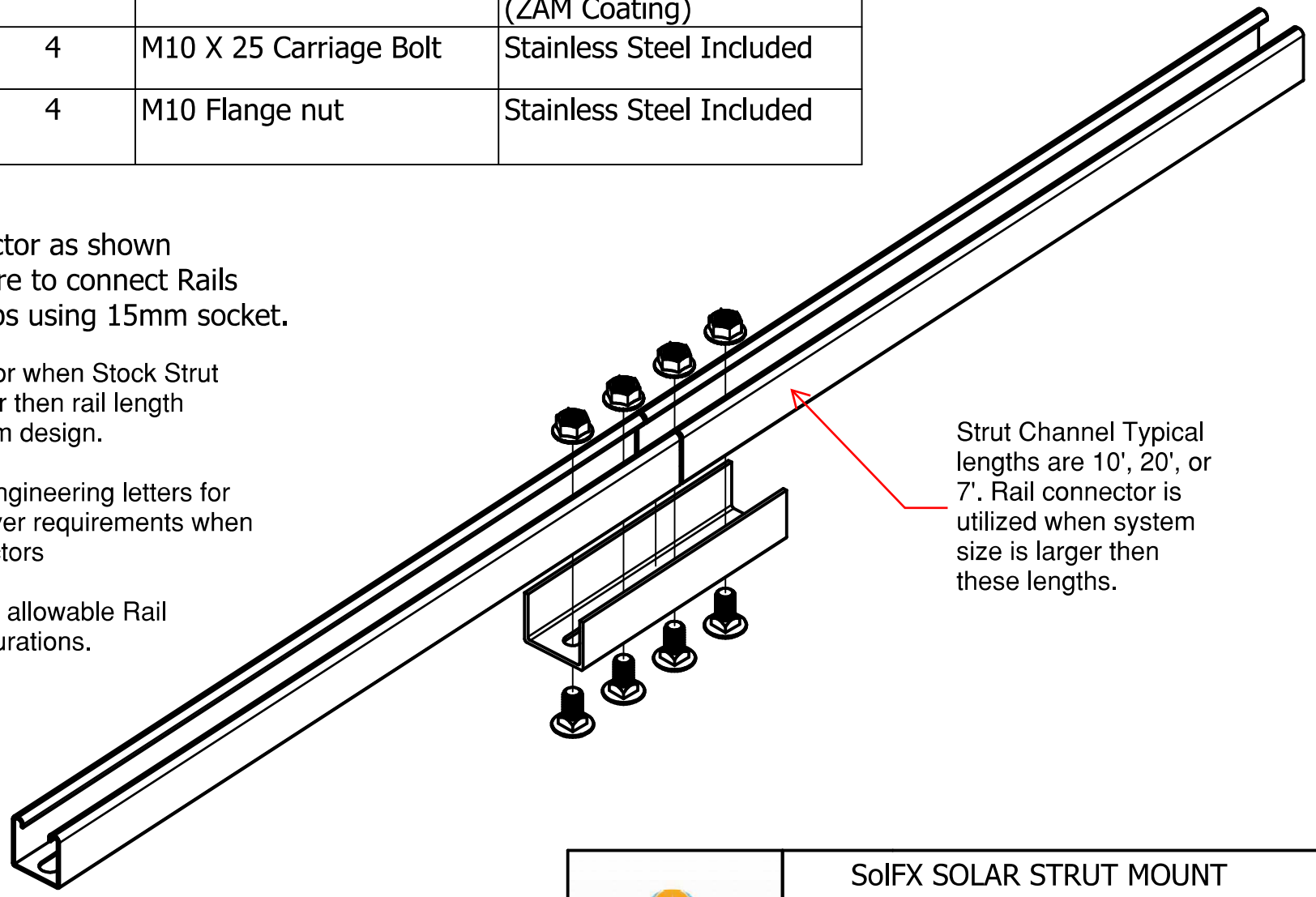
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	1-5/8" Strut Channel	Not included
2	1	RC200-00-SolFX	Rail Connector 200mm (ZAM Coating)
3	4	M10 X 25 Carriage Bolt	Stainless Steel Included
4	4	M10 Flange nut	Stainless Steel Included

Place Rail Connector as shown
Use M10 Hardware to connect Rails
Torque to 25 ft-lbs using 15mm socket.

Use Rail Connector when Stock Strut lengths are shorter then rail length required for system design.

Refer To SolFX Engineering letters for Span and Cantilever requirements when using Rail Connectors

See Next page for allowable Rail Connector Configurations.



Strut Channel Typical lengths are 10', 20', or 7'. Rail connector is utilized when system size is larger then these lengths.

Step 1.0

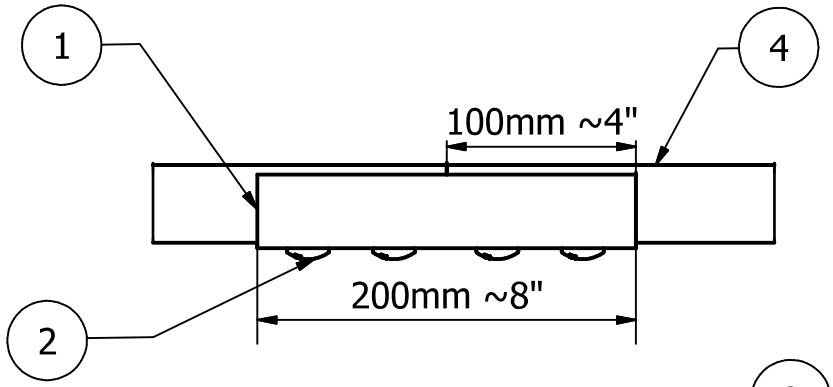
SolFX MOUNTING SOLAR

SolFX SOLAR STRUT MOUNT

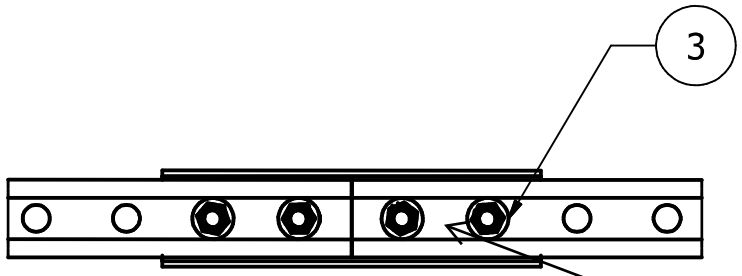
200mm RC-200 CONNECTION TO STRUT

RAIL CONNECTOR ASSEMBLY

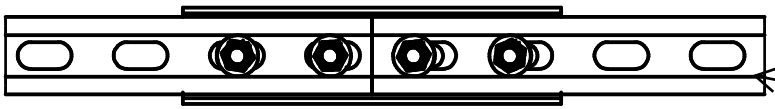
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	SOL-RC200-00	Rail Connector 200mm
2	4	M10x25 Carriage bolt	Stainless Steel bolt
3	4	M10 Flange nut	Stainless stteel flange nut
4	2	1-5/8" strut channel	Strut channel variations



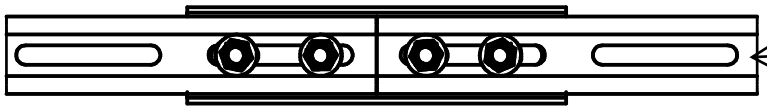
4 M10 carriage bolts are required for Rail Connector mounting
2 M10 carriage bolts are required for each rail
1 M10 Carriage bolt per slot on Rail Connector
Strut channels to butt up with no gap at center of Rail Connector



Bolt locations for Strut Channels with Round holes compatible with Unistrut P1000H3 and Unistrut P1000HS



Bolt Location for Half slotted channels compatible with Unistrut P1000T



Bolt Location for full slotted Channels, Two bolts are required per full slot per Channel, Compatible with Unistrut P1000SL

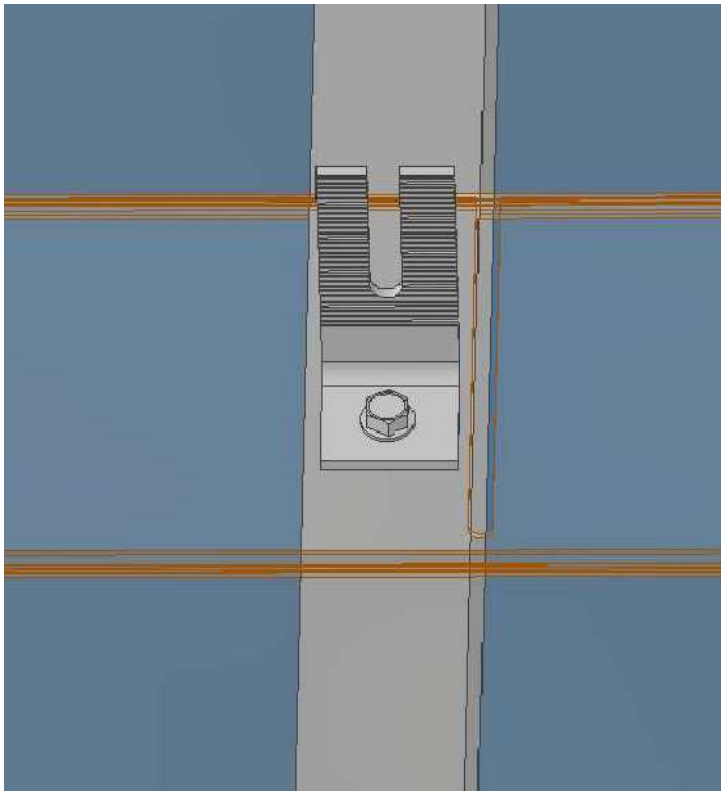
Step 1.1

SolFX MOUNTING SOLAR

Bolt Locations for different Channel configurations

Rail Connector Assembly orientations

1) Locate Attachment points Previously marked on roof.
2) Drill Pilot Hole Using 15/64" Drill Bit on Center of Rafter
3) Optional: Fill Pilot Hole with Sealant,
Use Roofing best practices to ensure proper waterproofing
additional sealant or flashing may be required depending on
the installation.
4) Place 5/16" Lag Bolt through hole on L Foot.
5) Drive Lag Bolt into Pilot hole Until L Foot is fully seated on roof
using 1/2" or M8 Drive.
6) Repeat in accordance with site design.



*Attachment to Roof Structure not Evaluated to UL 2703

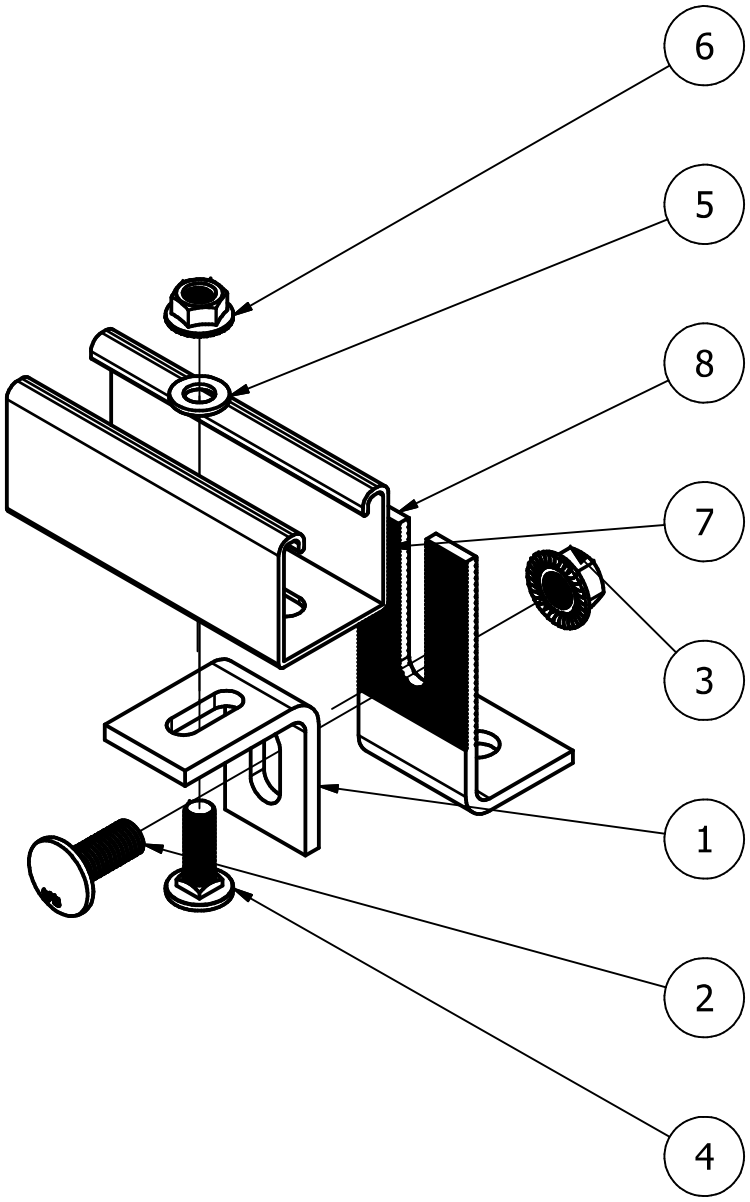
Step 2.0

SolFX Solar Strut Mount

Install Roof Attachment L Foot

Rafter Attached

PARTS LIST		
ITEM	QTY	PART NUMBER
1	1	LA-U-SS-00-SolFX
2	1	M10 Carriage Bolt
3	1	M10 Flange Nut SS
4	1	M8 Carriage Blt
5	1	M8 Washer SS
6	1	M8 Flange Nut SS
7	1	Strut Channel
8	1	L Foot LF-U-SS-00-SolFX



1. Place M10 Carriage Bolt Through Slot on Bracket LA-U-SS-SolFX and slot on L foot, Affix M10 Flange nut on carriage bolt, hand tighten do not torque.

2. Place M8 carriage bolt through corresponding slot on Bracket LA-U-SS-SolFX and slot on Strut Channel. Affix M8 Washer and Flange nut, Torque to 20 ft-lb using 13mm socket.

3. Repeat for Attached L feet per design.

4. Loosen M10 Flange bolt, adjust hight of the system as needed, Torque to 25 ft-lb.

Step 2.1

SolFX MOUNTING SOLAR

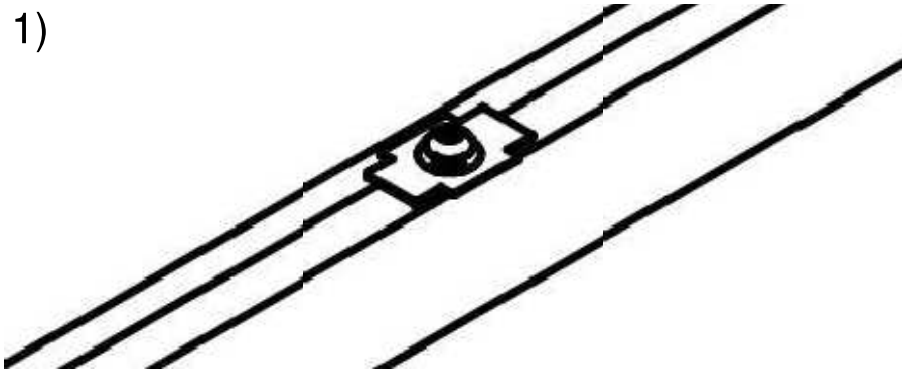
Attach L Foot To Strut Channel

Adapter Bracket LA-U-SS-00-SolFX Assembly

Mount L Foot to strut and adjust height

SolFX MLMount.

1)

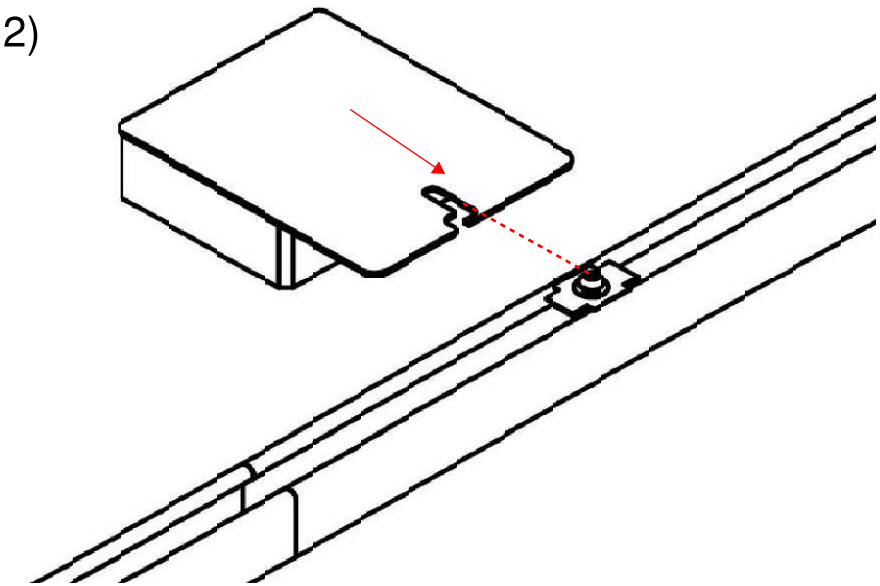


1) Pinch the plastic installation tabs, insert the MLMount into the rail channel, and turn clockwise 90 degrees until plastic tab seats into the Strut Channel

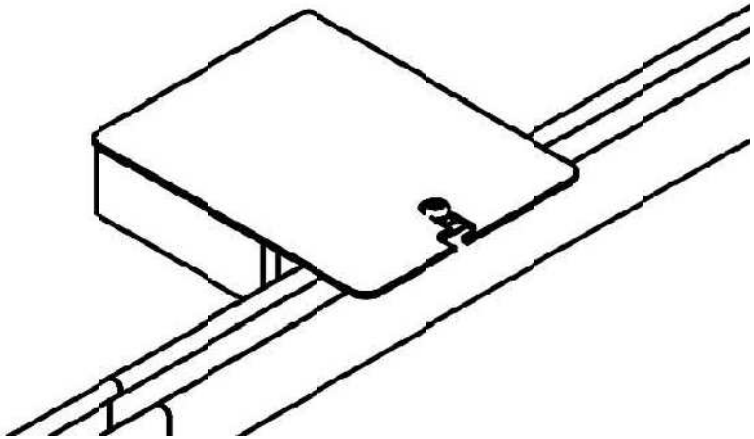
2)Slide the open slot of the MLPE mounting flange under the MLMount bolt.

3). Using a 5mm or 3/16 hex/allen head tighten to 15 ft-lbs.

2)



3)



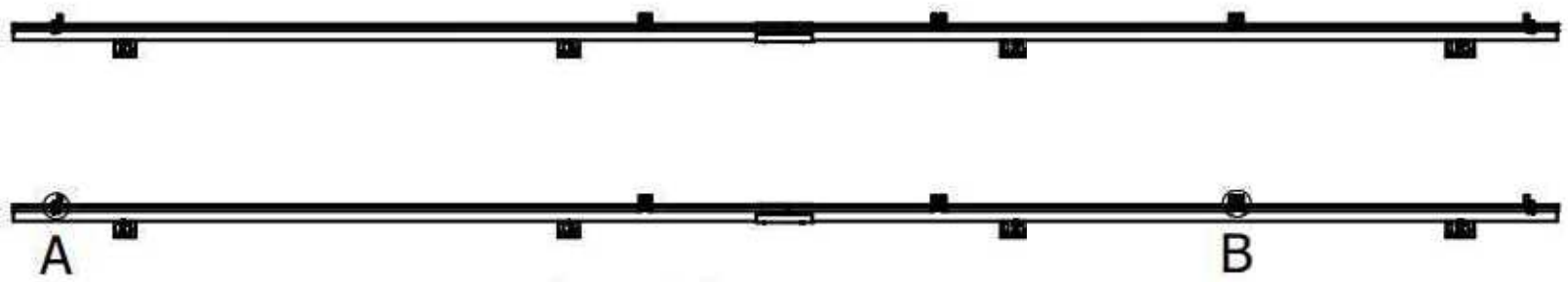
*MLPE Mount is not Evaluated to UL2703

Step 3.0

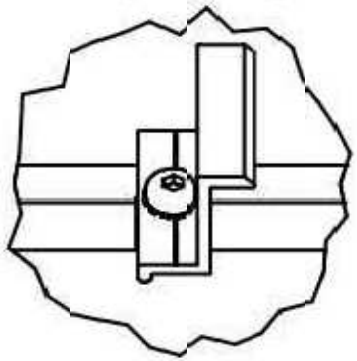
SolFX SOLAR STRUT MOUNT

MLPE MOUNTING

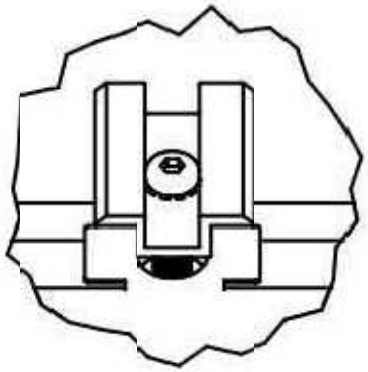
MLPE MOUNTING INSTRUCTIONS



A(1:2)



B(1:2)



Position SolFX Mid Clamps and End Clamps into their approximate installation locations. The base of the clamps allow them to stand in place once installed into the rail and the spring on the bolt holds up the top clamp allowing the mids and to be pre-loaded into the rails ahead of installing modules.

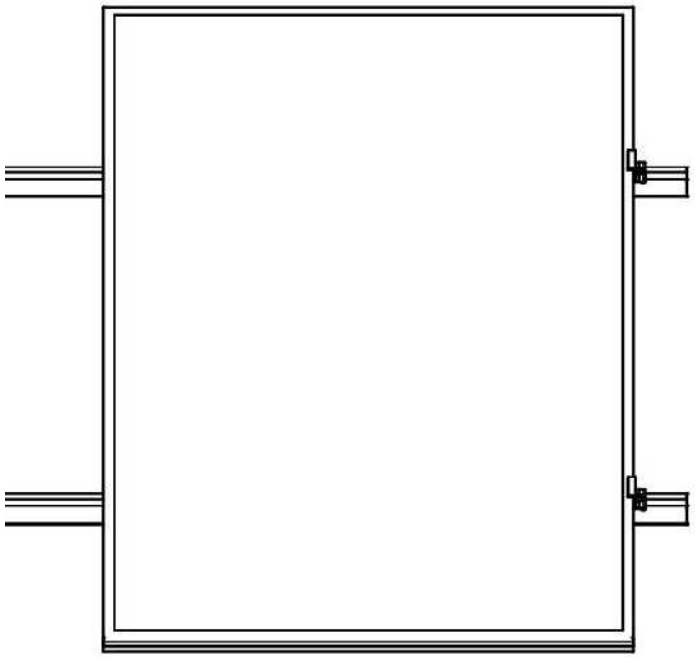
Place End clamps: Ensure end clamp corresponds to module frame size Place strut nut into rail channel

Place Mid Clamps: Pinch the plastic installation tabs, insert the Mid Clamp into the rail channel, and turn clockwise 90 degrees until plastic tab seats into the rail.

Step 4.0

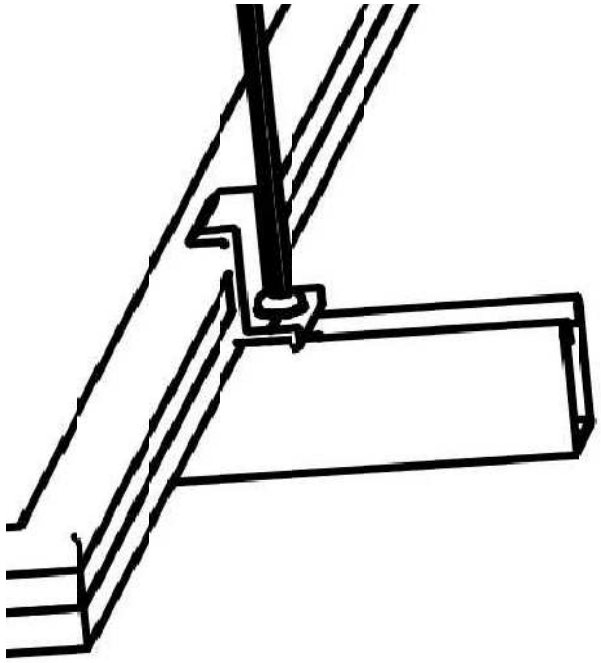
SolFX MOUNTING SOLAR

SolFX Solar Strut Mount
Place Mid and End clamps
Place clamps



Set the first module at the end of your rail, adjust module position to set the array square to the roof and set clamps at desired mounting locations. Leave a minimum of 1.5" of rail space past the edge of the module frame to account for the SolFX End Clamp.

Ensure module clamps correspond to module frame height. 35mm clamp and 40mm end clamp are only for use with 35mm and 40mm module frame heights respectively,



Push the SolFX End Clamp flush against module frame. Ensure bolt is centered on the rail. Using a 5mm or 3/16” hex/ Allen drive tighten to 15 ft-lbs. while holding clamp in place. Ensure the top lip of clamp engages with module frame. Check to see that the strut nut is properly aligned.

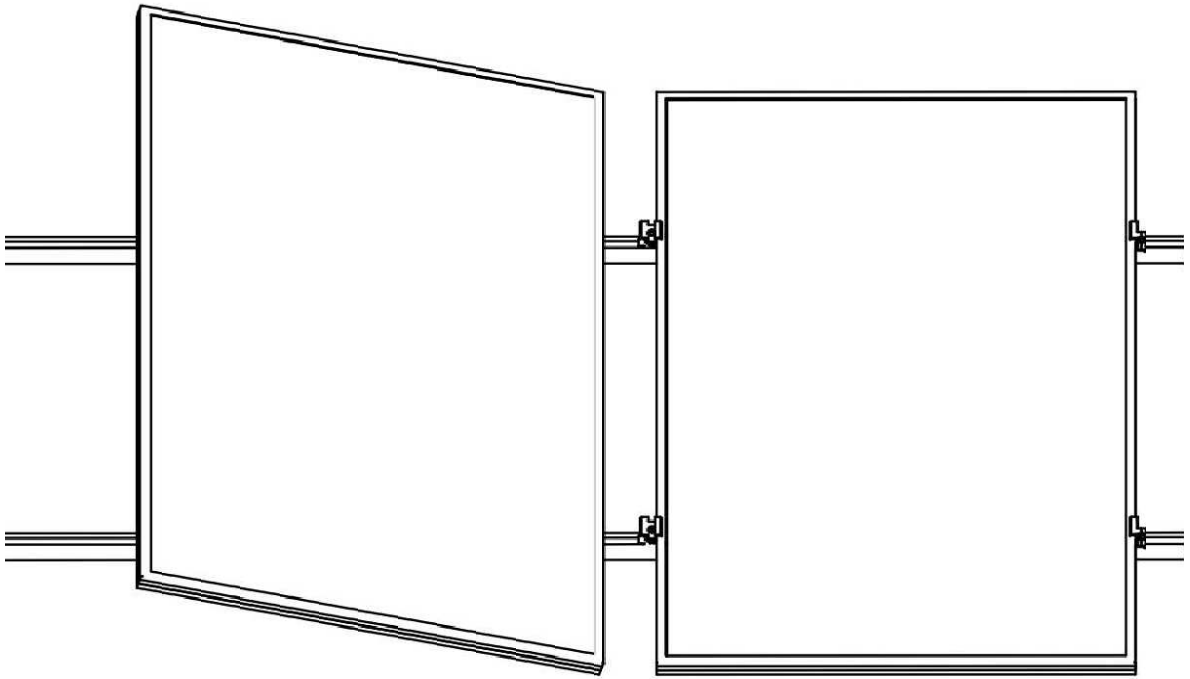
Step 4.1

SolFX MOUNTING SOLAR

Solfx Solar Strut Mount

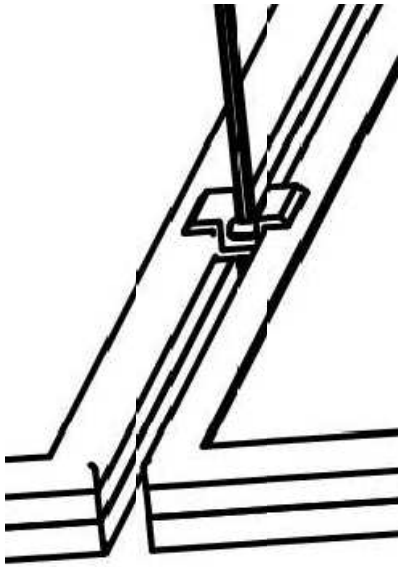
Module placement and end clamp installation

Tighten End Clamp



Set up your Mid Clamps by pushing them flush against the first module, adjust the height of clamp to sit flush against module frame. Set your next module down on the rail.

Push second module flush against mid clamp spacers and adjust module so that the corners of both module frames align. Using a 5mm or 3/16” Hex/Allen Drive Tighten to 15 ft-lbs. Repeat until the array is complete



Step 4.2

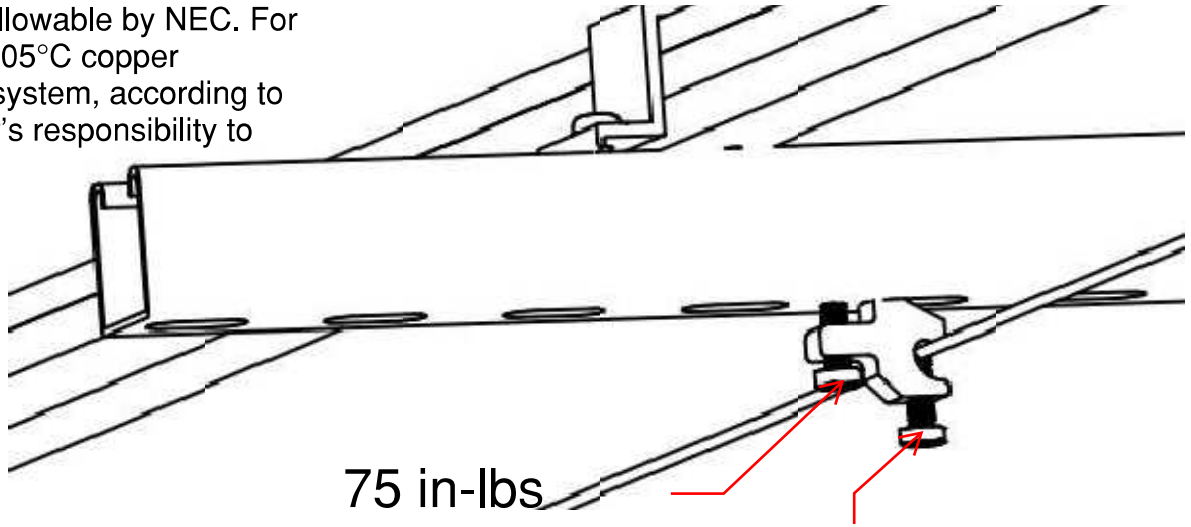
SolFX SOLAR STRUT MOUNT

Module installation

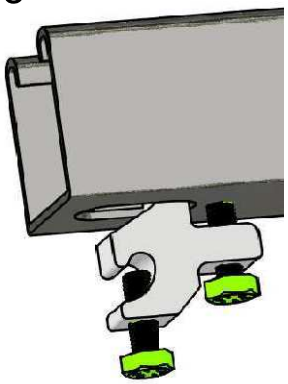
Place Modules and Torque Mid Clamps

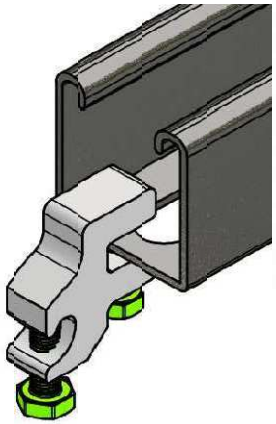
ELECTRICAL CONSIDERATIONS

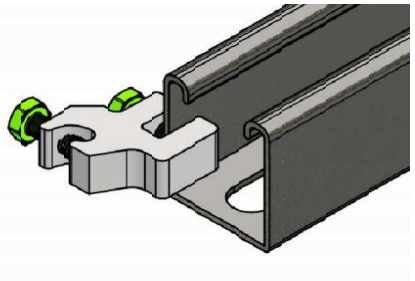
SOLAR STRUT MOUNT: is intended to be used with PV modules that have a system voltage less than or equal to that allowable by NEC. For standard system grounding a minimum 10AWG, 105°C copper grounding conductor should be used to ground a system, according to the National Electric Code (NEC). It is the installer's responsibility to check local codes, which may vary.



Install SGB-5 so that connector body is pushed firmly up against channel and held in position. Tighten screw to 75 in-lbs of torque using 7/16" Socket. SGB-5 Ground lug may be placed on bottom or side of Strut Channel, see below for allowable possible configurations.







Install SGB-5 ground conductor and tighten screw to 35 in-lbs of torque using 7/16" Socket.

*In order to prevent corrosion induced by dissimilar metals, it is important to verify that the barecopper wire does not come into contact with aluminum or galvanized steel. These materials must be kept separate.

GROUNDING LUG MOUNTING DETAILS AS REQUIRED BY CODE & ENGINEER OF RECORD: The Ilsco lug has a green colored set screw for grounding indication purposes. One lug is recommended per row of modules

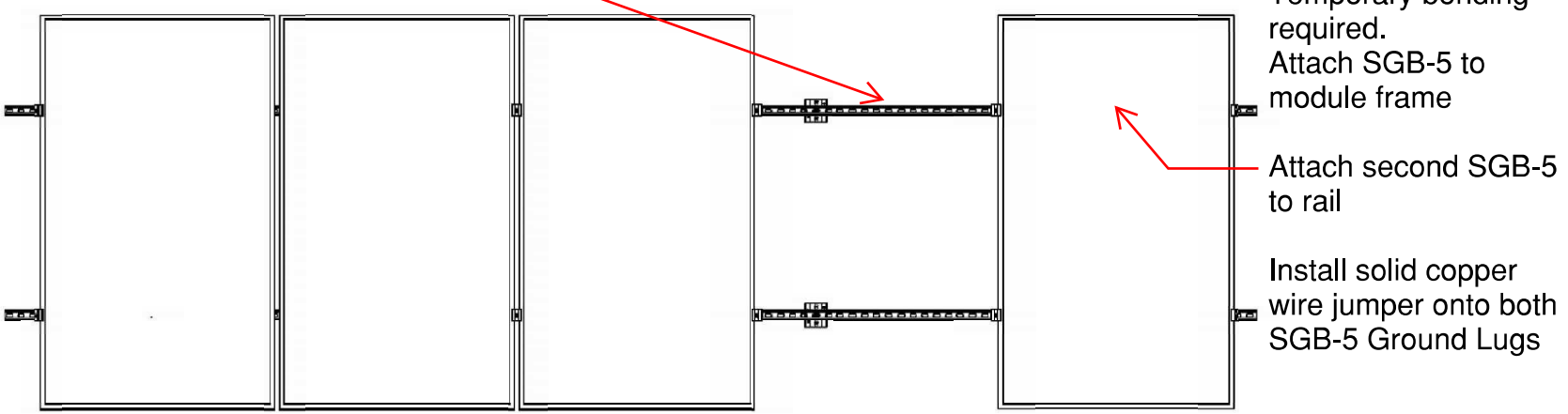
Step 5.0

SolFX MOUNTING SOLAR

SolFX SOLAR STRUT MOUNT

GROUND LUG

GROUND LUG INSTALLATION



TEMPORARY BONDING CONNECTION DURING ARRAY MAINTENANCE

When removing modules for replacement or system maintenance, any module left in place that is secured with a bonding Midclamp will be properly grounded. If a module adjacent to the end module of a row is removed or if any other maintenance condition leaves a module without a bonding mid clamp, a temporary bonding connection must be installed

CAUTION: Module removal may disrupt the bonding path and could introduce the risk of electric shock. Additional steps may be required to maintain the bonding path. Modules should only be removed by qualified persons in compliance with the instructions in this manual.

Module removal is not presented as a frequently expected occurrence and will not be required as part of routine maintenance

Any loose components or fasteners shall be re-tightened in accordance with these instructions Sany componetns showing signs of damage that compromise safety shall be replaced immediately.

A-1

SolFX MOUNTING SOLAR

SolFX SOLAR STRUT MOUNT

TEMPORARY BONDING

Array Maintenence

SolFX Solar Strut Mount may be used to ground and/or mount a PV module complying with UL1703 or UL61730 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

JKM-xxxM-72HL4-V
JKM-xxxM-72HL4-TV

A-2

SolFX SOLAR STRUT MOUNT

COMPATIBLE MODULES