

MTS-MPM

Multi-Panel Mounting System



2775 E Philadelphia St, Ontario, CA 91761
1-800-330-8678

Version: 1.2

Important Safety Instructions

Please save these instructions.

This manual contains important safety, installation, and operating instructions for the hardware system. The following symbols are used throughout the manual to indicate potentially dangerous conditions or important safety information.

 **WARNING:** Indicates a potentially dangerous condition. Use extreme caution when performing this task.

CAUTION: Indicates a critical procedure for safe and proper operation of the system.

NOTE: Indicates a procedure or function that is important to the safe and proper operation of the system.

General Safety Information

- Read all of the instructions and cautions in the manual before beginning the installation.
- Do **NOT** attach solar panel to multi-panel pole mount until mount is securely fit, and pole base has been secured.
- Chance to strip nuts and bolts exists.
- Multiple people for installation is suggested.
- Do **NOT** substitute parts from other manufacture ring sources, doing so may void the warranty and/or result in an unstable system
- This system is **NOT** possessing any compliance with residential structural codes and should not be used in place of a system that is, if so required by local regulations

Installer Responsibilities

- Installation compliance with any applicable codes which are enforced at the installation site.
- Installation compliance and compatibility with all system components and the environment including but not limited to roofing, system components, etc.
- Verification that all project information is accurate
- Ensure proper array structure grounding, including each module frame and the mounting pole. Failure may result in damage to your equipment. Do NOT rely on mounting pipe to act as grounding rod! It is not a reliable substitute.



- ⚠ WARNING:** these instructions are intended to be used by individuals with sufficient technical skills for the task. Knowledge and use of hand tools, measuring devices, and torque equipment is also required
- ⚠ WARNING:** Electrocuting Hazard! Check for clearance to overhead power lines before bringing any installation.
- ⚠ WARNING:** Watch your hands and fingers! We make every effort to remove sharp edges from the galvanized products. However, we still recommend installers wear gloves when handling these mounts in order to avoid the sharp edges.
- ⚠ WARNING:** The mount is heavy! Depending on the modules you are using, the weight will only increase. Therefore, it is recommended to have the aid of another person and/or lifting devices that can help install this safely. Failure to observe this warning can hurt or kill you.

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General Information

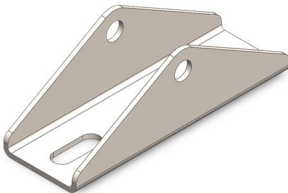
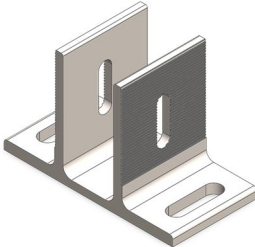
The Renogy MTS-MPM is designed for off-grid applications when mounting on a roof is not ideal. Composed of high strength steel and corrosion resistant welded components, the MTS-MPM can support up to 400 Watts of power. The system comes complete with all fasteners to adhere panels to the mounting surface. This system makes the installation solar systems, easy, affordable, and quick.

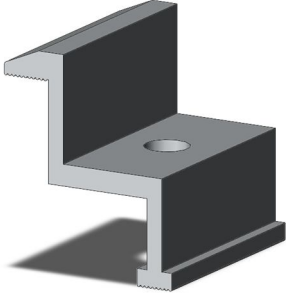
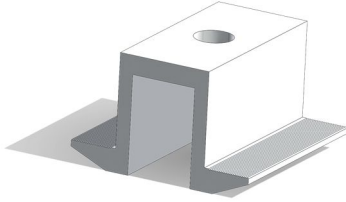
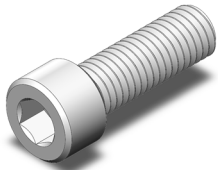
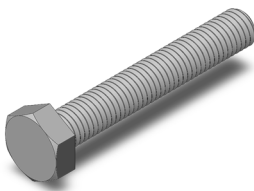
Key Features

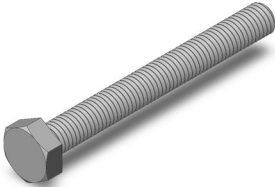
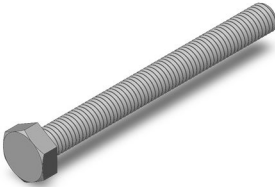
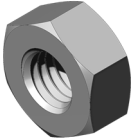
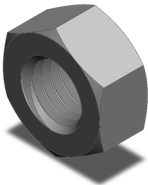
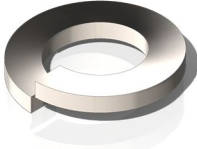
- Galvanized Steel and Anodized Aluminum Alloy construction
- High-tensile strength and corrosion free fasteners
- Precision hole positioning and alignment
- Compatible with multiple Renogy PV sizes—(4) 100W Mono/Poly, (2) 150W Mono, (1) 250W Mono/Poly, (1) 310W Poly
- Secures most 100W-350W PV modules
- Mount up to 400W on a single pole
- Stainless Steel module mounting hardware
- Standard design can withstand up to 75mph wind

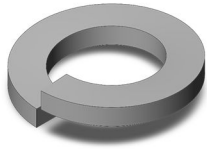
Material List



Image	Component	Size / in	Qty.	Material
	Squared Base Plate	1.6x3.2x59.0 5.9x7.9x0.2	1	Q235 Steel
	Main Girder	1.6x2.4x70.9	1	Q235 Steel
	Long Support Beam	1.6x1.6x45.5	1	Q235 Steel
	Short Support Beam	1.6x1.6x25.8	1	Q235 Steel
 or 	Long Cross Beam or Short Cross Beam	1.6x1.6x60 or 1.6x1.6x48	4	Q235 Steel
	Triangle Connector	5.9x2.0x2.2	5	Q235 Steel
	TT Shape Connector	5.9x2.0x3.1	4	Q235 Steel

	End Clamp Piece	0.9x1.6x1.6	8	6063-T5 Aluminum
	Mid Clamp Piece	1.0x0.8x1.6	4	6063-T5 Aluminum
	Socket Head Screw	M8 x 45	12	S304 Stainless Steel
	Socket Head Screw	M10 x 30	8	S304 Stainless Steel
	Hex Head Screw	M10 x 65	9	S304 Stainless Steel

	Hex Head Screw	M10 x 90	6	S304 Stainless Steel
	Hex Head Screw	M10 X 100	2	S304 Stainless Steel
	Slide Nut	M8	12	Q235 Steel
	Hex Nut	M10	25	S304 Stainless Steel
	Hex Nut	M14	4	Q235 Steel
	Split Lock Washer	M8	12	S304 Stainless Steel
	Split Lock Washer	M10	25	S304 Stainless Steel

	Split Lock Washer	M14	2	Q235 Steel
	Flat Washer	M8	12	S304 Stainless Steel
	Flat Washer	M10	50	S304 Stainless Steel
	Flat Washer	M14	2	Q235 Steel
	U-Bolt	M14	1	Q235 Steel

Installation

⚠ Renogy INC assumes no responsibility for your foundation installation. Consult a local professional for proper installation.

Recommended tools to have before installation (Not provided):

- Standard Wrench Set
- Standard Socket Set
- Allen Wrenches
- Level
- Tape Measure
- Screwdrivers

- ⚠ The above tools and equipment are highly recommended to have available to assist with installation but are in no way a comprehensive list of tools. Installers feel free to substitute comparable equipment where appropriate.

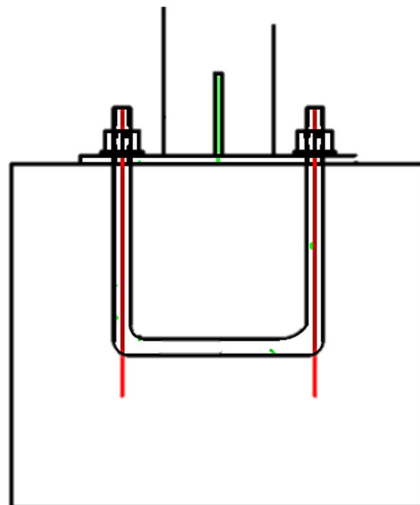
Foundation



- ⚠ **WARNING!** Windy conditions can exert extreme forces on the PV array, foundation, and mounting mast of your array.
- ⚠ **WARNING!** Keep hands clear of pinch points!

NOTE: Choose an optimum solar location that is free from obstructions such as trees and buildings.

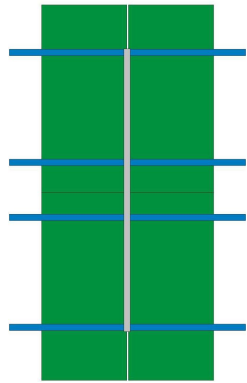
The recommend installation method involves using the provided U-Bolt with a cement foundation that users must create. The cement foundation recommended is a 20" x 20" concrete block square with the U-bolt inside. The foundation may vary depending on soil and location. It is recommended, and in some locations, required, to seek the advice and or approval of a licensed Professional Engineer familiar with your local codes and requirements prior to construction.



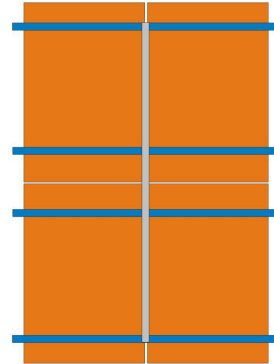
Planning the Array

NOTE: Depending on the user, each multi-panel mount will be optimized for certain PV module(s). In terms of Renogy arrays, the following are recommended to be affixed:

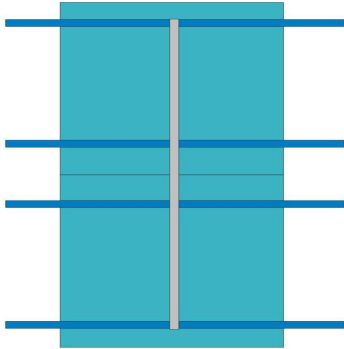
Components	RNG PV Modules	Dimensions
5-ft Long Cross Beam	100P	Max 1400mm span
4-ft Short Cross Beam	250W-310W, 150D, 100D	Max 1150mm span



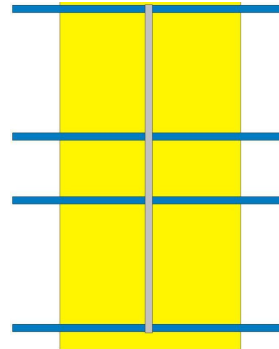
4 x 100W Mono
(4-ft Short Support Beam)



4 x 100W Poly
(5-ft Long Support Beam)



2 x 150W Mono
(4-ft Short Support Beam)



1 x 250W-310W
(4-ft Short Support Beam)

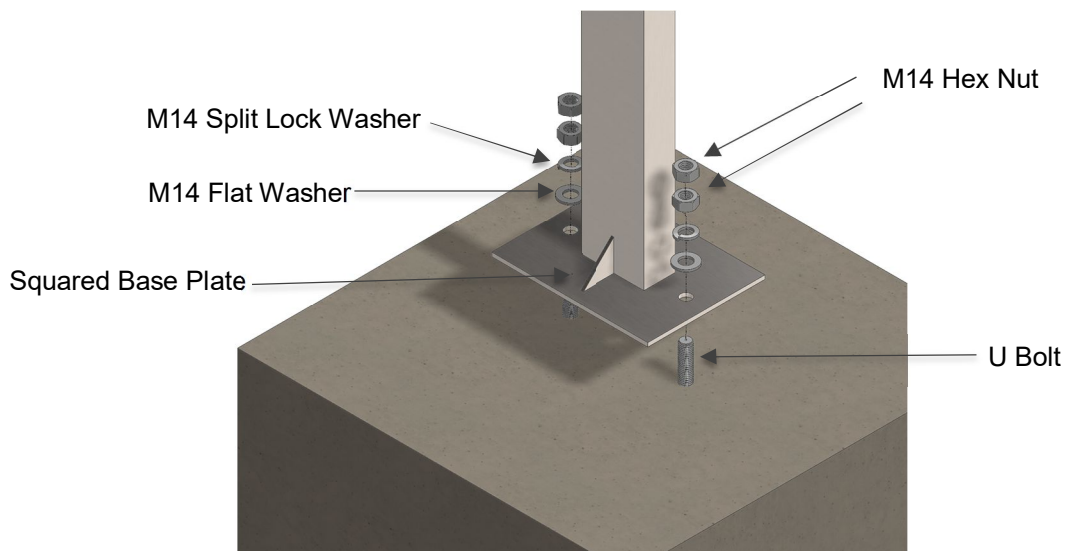
NOTE: The provided end clamps are only compatible with 100W-150W panels. When using 250W-310W panels the proper end clamps must be purchased.

1- Attach Base to Concrete Block w/ Fused U-bolt



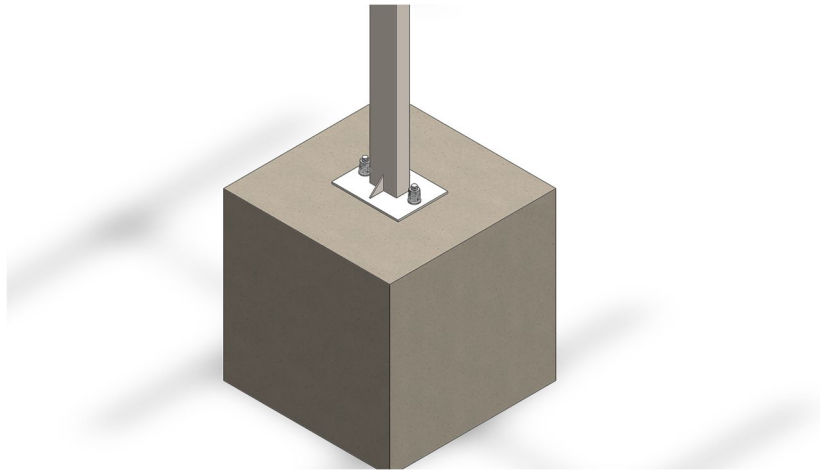
⚠ WARNING! The mount is heavy! Depending on the modules you are using, the weight will only increase. Therefore, it is recommended to have the aid of another person and/or lifting devices that can help install this safely. Failure to observe this warning can hurt or kill you.

⚠ WARNING! Keep hands clear of pinch points!



A. Place the Squared Base Plate on the foundation, aligning the bolt holes with the protruding bolts. Ensure that the Base Plate is plumb vertical with a level.

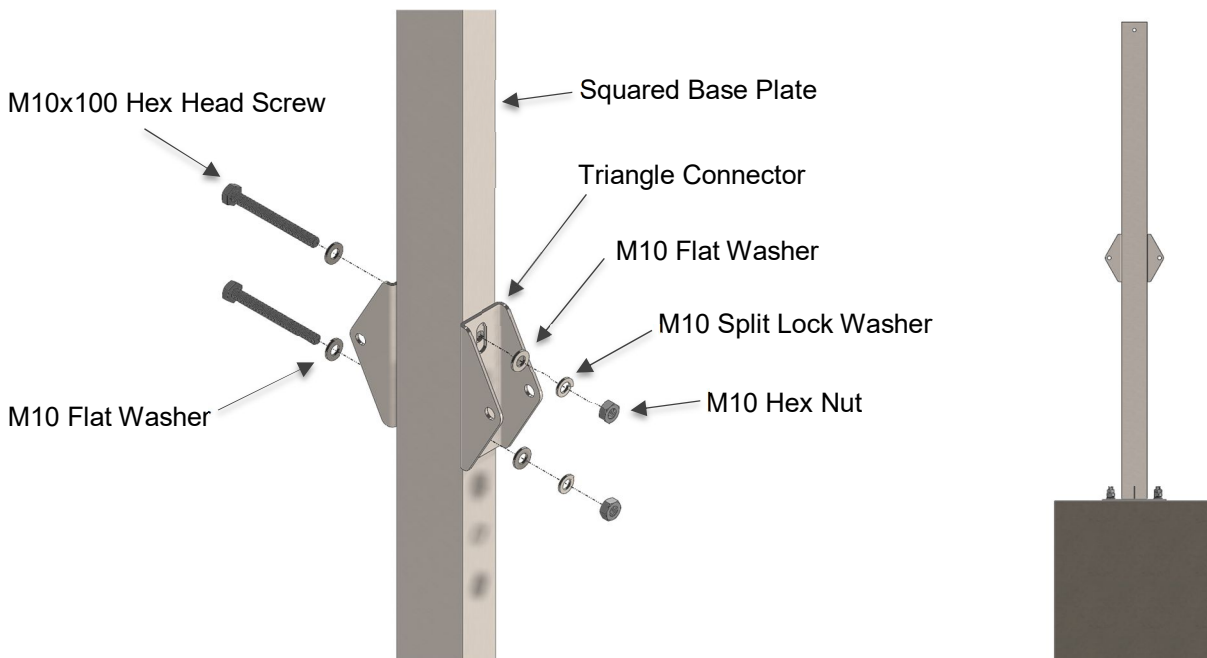
B. Use the M14 Hex Nuts, Split Lock Washers, Flat Washers and tighten the nuts, ensuring the Base Plate is secured to the foundation.



2- Attach Triangle Connectors to Base

⚠ WARNING! Keep hands clear of pinch points!

- A. Flush two Triangle Connectors to the Base and align the holes.
- B. Feed two M10x100 Hex Head Screws through two Triangle Connectors and the Base.
- C. Fasten the screws with M10 Hex Nuts, Split Lock Washers and Flat Washers. Make sure the Triangle Connectors are secured to the Base.



3-Attach Short and Long Support Beam to Base

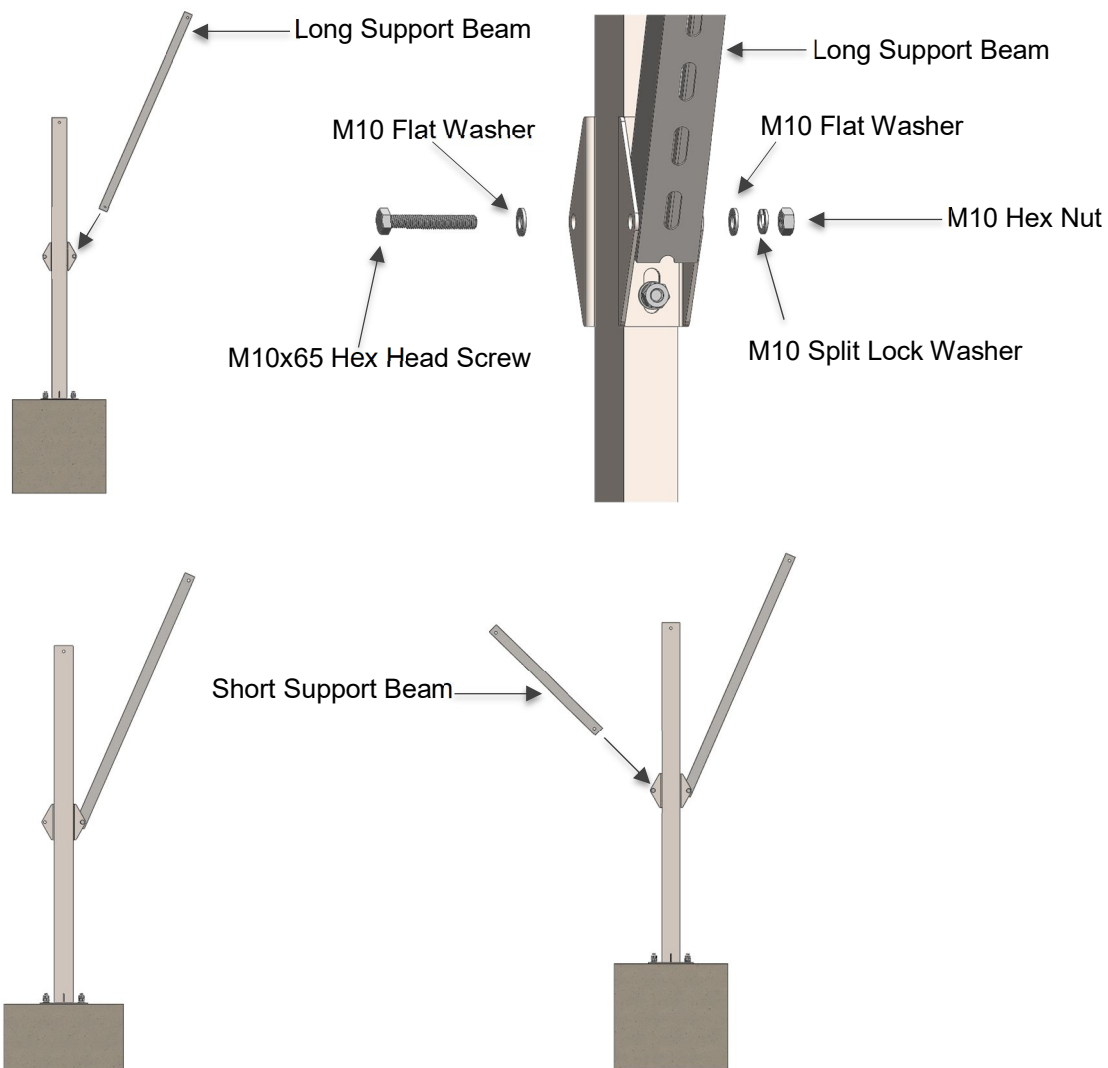
⚠ WARNING! Keep hands clear of pinch points!

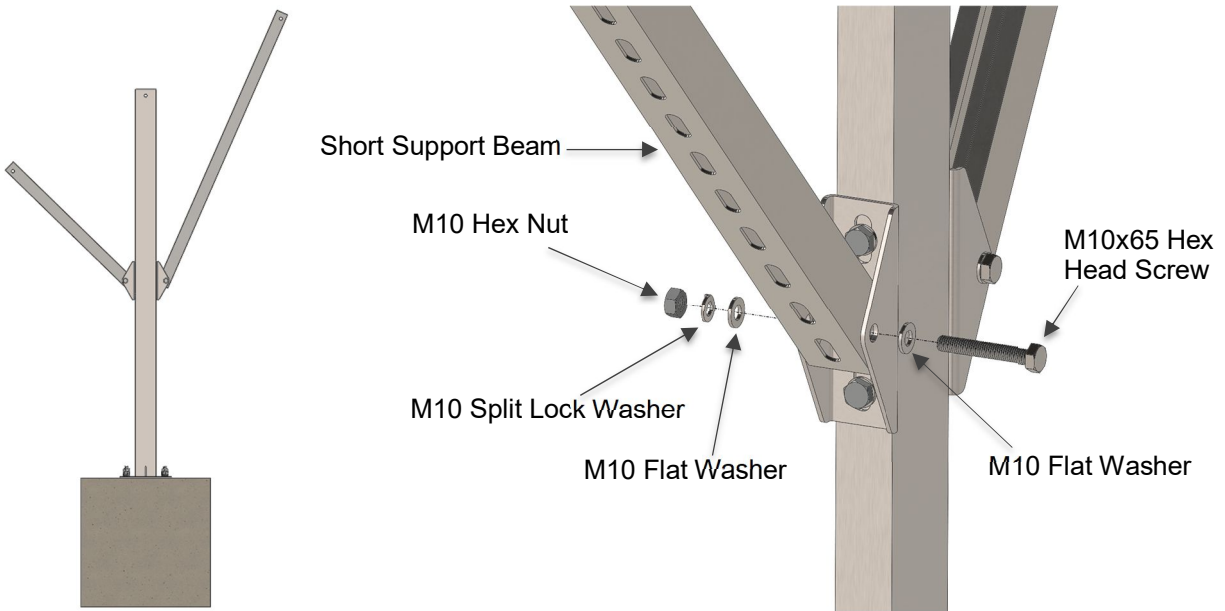
A. Attach the Long Support Beam to one Triangle Connector and align the holes. The opening surface of Support Beam should face upwards.

B. Feed one M10x65 Hex Head Screw through the Triangle Connector and the Long Support Beam.

C. Fasten the screw with M10 Hex Nut, Split Lock Washer and Flat Washer. Finger-tighten for now.

D. Repeat the above steps to install the Short Support Beam.

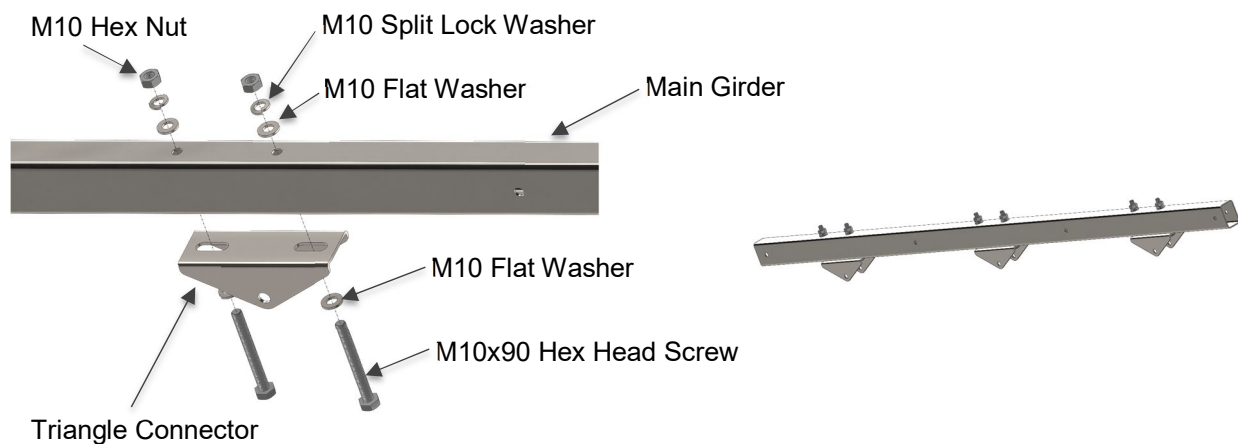




4-Attach Triangle Connectors to Main Girder

⚠ WARNING! Keep hands clear of pinch points!

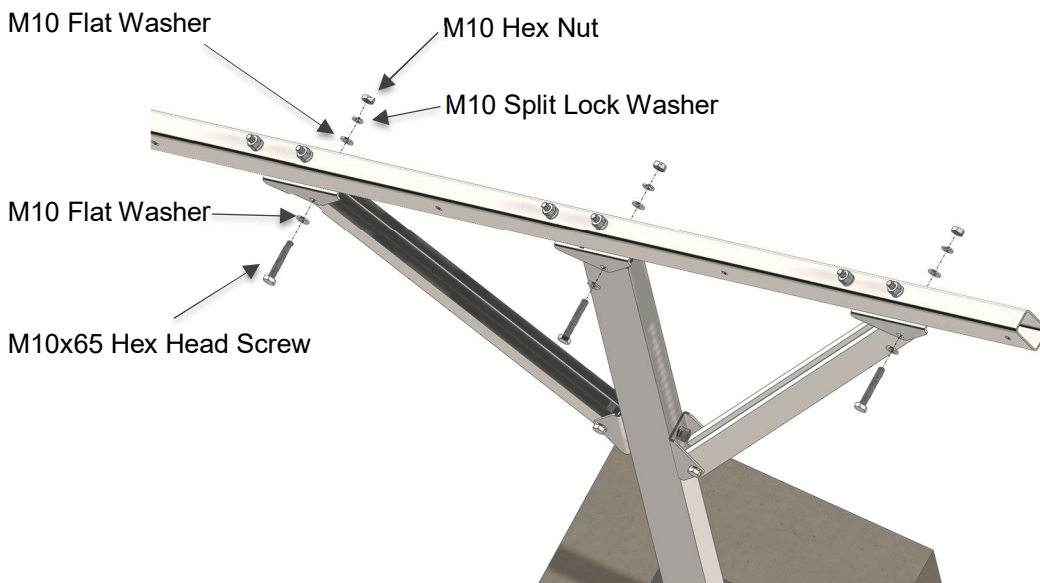
- A. Flush a Triangle Connector to the Main Girder.
- B. Feed two M10x90 Hex Head Screws through Triangle Connector and Main Girder.
- C. Fasten the screws with M10 Hex Nuts, Split Lock Washers and Flat Washers. Make sure the Triangle Connector is secured to the Main Girder.
- D. Repeat the above steps to install another two Triangle Connectors.

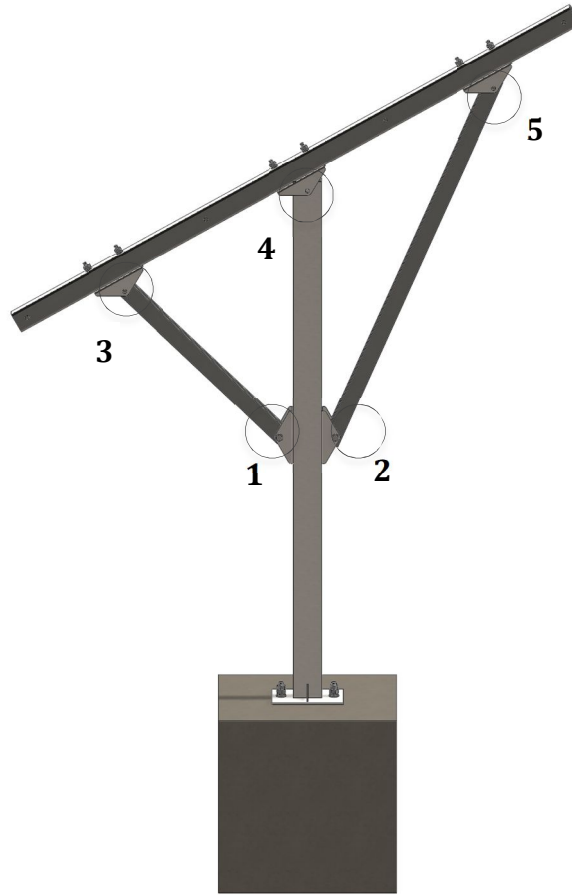


5- Join Main Girder with Base, Long and Short Support Beams

⚠ WARNING! Keep hands clear of pinch points!

- A. Join the Triangle Connector in the middle of Main Girder with the Base, and align the hole.
- B. Feed one M10x65 Hex Head Screw through Triangle Connector and Base. Fasten the screw with M10 Hex Nut, Split Lock Washer and Flat Washers. Finger-tighten for now.
- C. Join the second Triangle Connector with the Short Support Beam, and align the hole.
- D. Feed one M10x65 Hex Head Screw through Triangle Connector and Short Support Beam. Fasten the screw with M10 Hex Nut, Split Lock Washer and Flat Washers. Finger-tighten for now.
- E. Join the third Triangle Connector with the Long Support Beam, and align the hole.
- F. Feed one M10x65 Hex Head Screw through Triangle Connector and Long Support Beam. Fasten the screw with M10 Hex Nut, Split Lock Washer and Flat Washers.
- G. Return and tighten mounting hardware at places circled with 1,2,3,4,5, securing the Main Girder, Long Support Beam and Short Support Beam.





6- Attach Cross Beams to Main Girder

⚠ WARNING! Keep hands clear of pinch points!

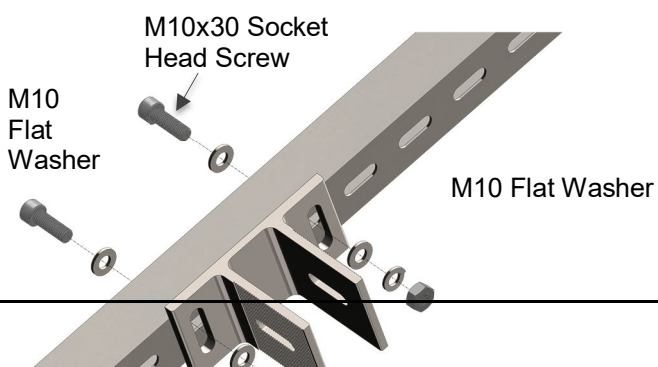
A. Flush the π Shape Connector to the bottom of Cross Beam. The Connector should be in the middle of Cross Beam. The opening surface of Cross Beam should face upwards.

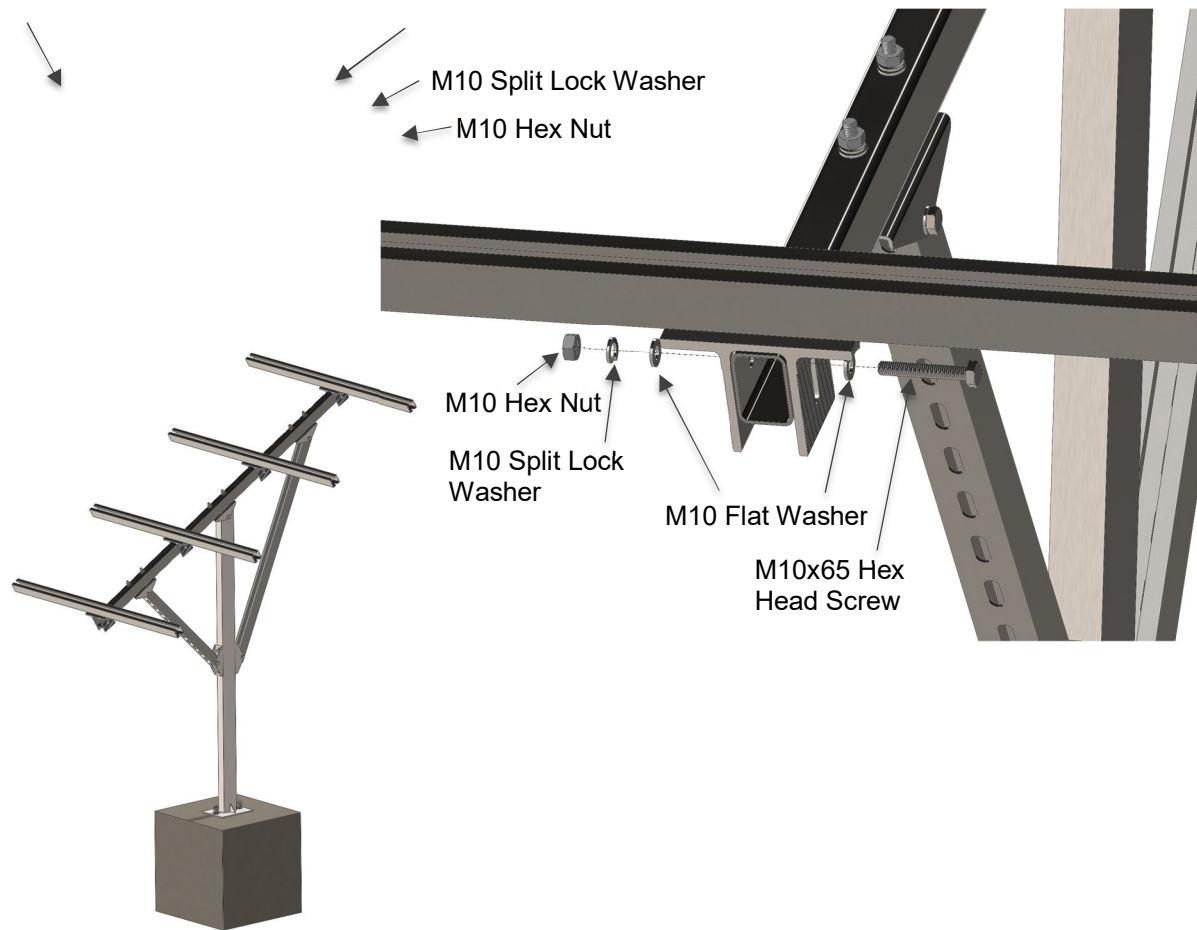
B. Feed two M10x30 Socket Head Screws through π Shape Connector and Cross Beam. Fasten the screws with M10 Hex Nuts, Split Lock Washer and Flat Washers.

C. Place the Cross Beam onto the Main Girder, aligning the holes of π Shape Connector with the mounting holes of Main Girder.

D. Feed one M10x65 Hex Head Screw through π Shape Connector and Main Girder. Fasten the screw with M10 Hex Nut, Split Lock Washer and Flat Washers.

E. Repeat the above steps to install another three Cross Beams.



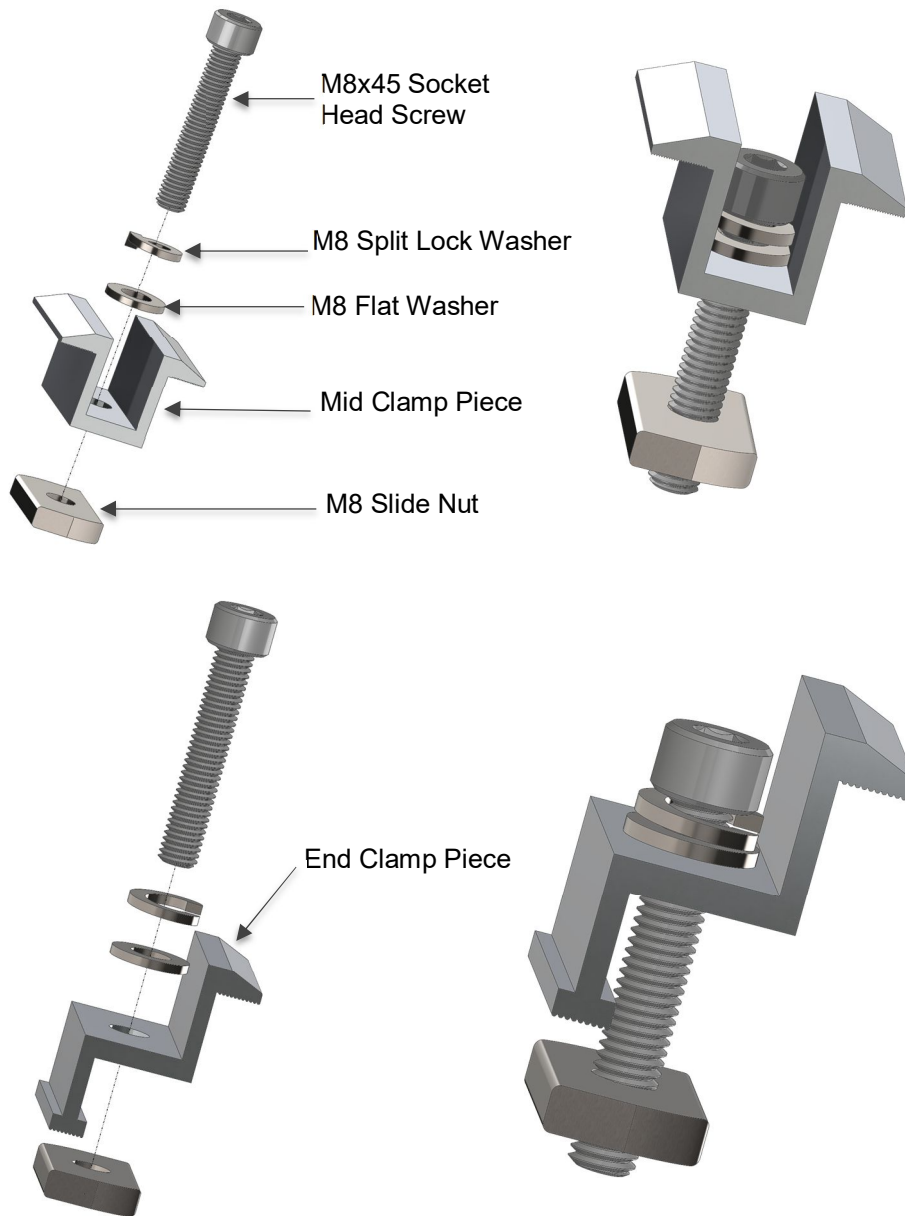


7- Pre-assemble Mid Clamps and End Clamps

⚠ WARNING! Keep hands clear of pinch points!

A. Assemble Mid Clamps and End Clamps with M8 Socket Head Screws, M8 Split Lock Washers, M8 Flat Washers, Mid / End Clamp Pieces and M8 Slide Nuts.

B. Do not tighten the hardware for now, as it should be left loose for ease of sliding the Clamps into the Cross Beams.



8-Install PV modules

⚠ WARNING! Keep hands clear of pinch points!

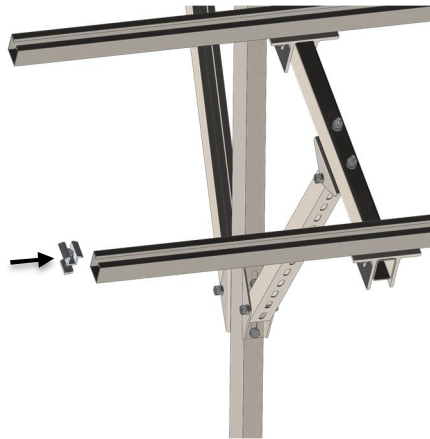
Mounting 2x2 panel placement as example. Single panel in a row doesn't need Mid Clamps.

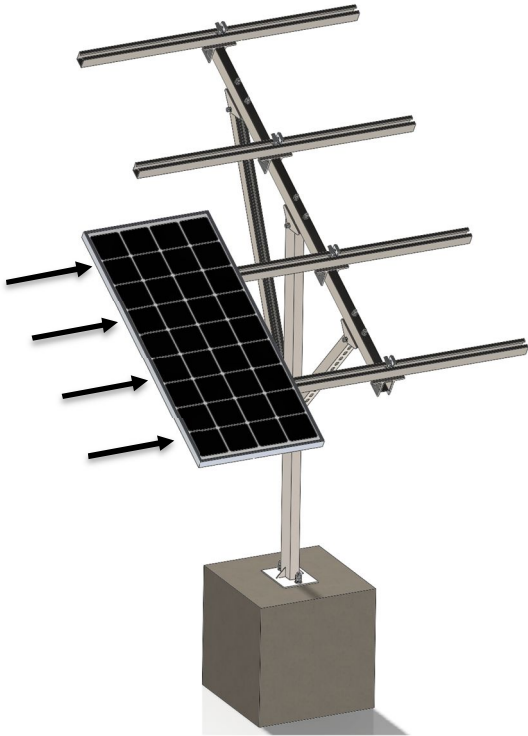
A. Slide the Mid Clamps into the middle of Cross Beam.

B. Slide the first module of the bottom row. Flush the inner side surface of the module to the Mid Clamp. Tighten the Mid Clamp.

C. Slide the End Clamps on the Cross Beam. Flush the End Clamps to the outer side surface of the module. Tighten the End Clamp to secure the modules.

D. Repeat the above steps to install another module of the bottom row. Then, repeat the same steps to install the other modules of the top row.





Maintenance

You should be inspecting your multi-panel mount once per year. While inspecting, make sure of the following:

1. Ensure hardware is tight, tighten if need be
2. Check all wiring connections for tightness and water proof integrity
3. Check for any damage
4. Inspect welds for any visible cracking or other signs of fatigue
5. Check the foundation for any signs of damage or cracking

Technical Specifications

Pole Height	59.25 in	
Maximum Array Height	108.38 in	
Min Array Height	107.18 in	
Mounting Method	U-bolt in concrete foundation (U-bolt provided)	
Tilt Angles	30°	
Maximum Wind Speed	72 mph	
Max Snow Pressure	23, 940 psf	
Weight	108.5 lbs, with Long Beam	103.0 lbs, with Short Beam
International Compliant Standards	GB 50009 – 2012 (Wind Rating) GB 50009 – 2012 (7.1.1) (Snow Rating) GB50009 – 2012 (Load Structure for Building Structures) GB50011- 2010 (Code for Seismic Design of Buildings) GB50017 – 2003 (Code for Design of Steel Structures) GB50018 – 2002 (Cold – formed thin – Walled Steel Structure Technical Specification) GB50429 – 2007 (Code for Design of Aluminum Alloy Structures) GB50797 – 2012 (Design Code for Photovoltaic Power Station)	
Warranty	1 year	

Compatibility

RENOGY Solar Module	Compatibility*
RNG-10D	INCOMPATIBLE
RNG-20D	INCOMPATIBLE
RNG-30D	INCOMPATIBLE
RNG-50D	INCOMPATIBLE
RNG-100D	COMPATIBLE
RNG-100MB	COMPATIBLE
RNG-150D	COMPATIBLE
RNG-250D	COMPATIBLE
RNG-270D	COMPATIBLE
RNG-50P	INCOMPATIBLE
RNG-100P	COMPATIBLE
RNG-250P	COMPATIBLE
RNG-270P	COMPATIBLE
RNG-310P	COMPATIBLE



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Follow proper safety practices. If in doubt, consult a professional RV technician.