



**Pole Mount Installation Manual**

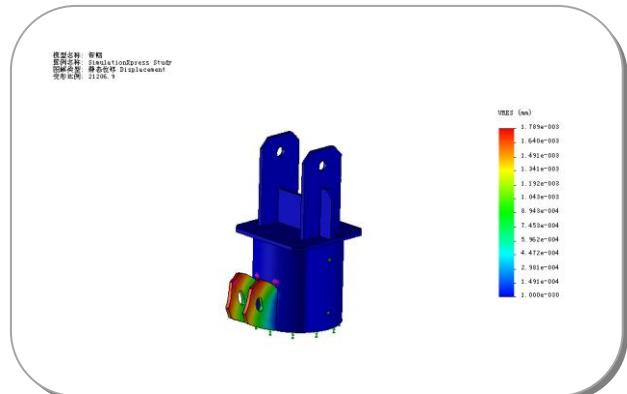
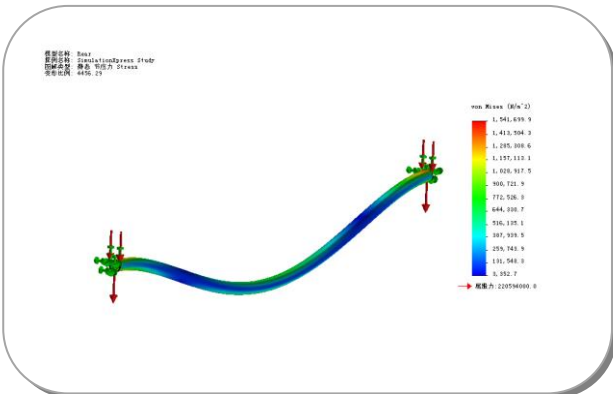
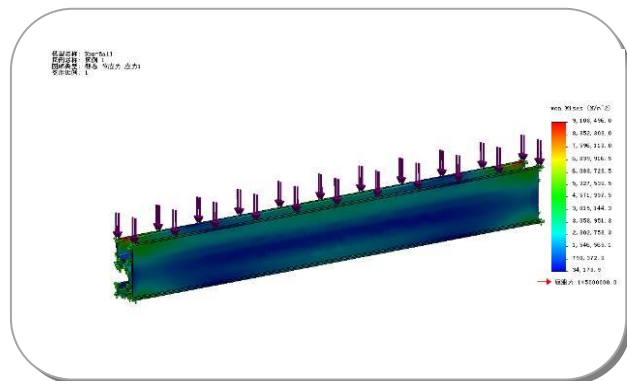
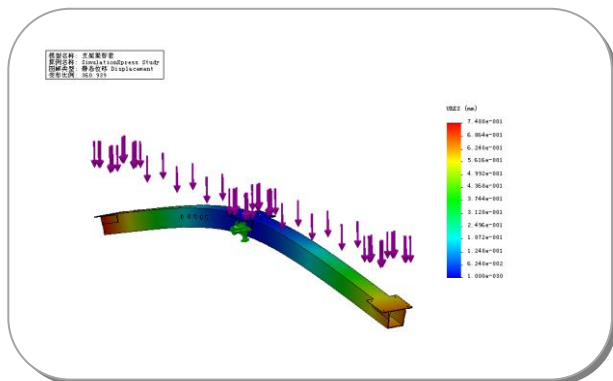


**TPSM-250x4-TP**

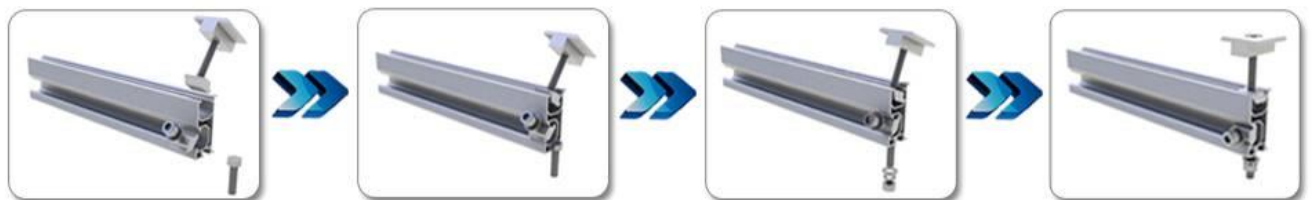
## Thank You for Choosing Tycon®!

### Why Tycon®?

1. Tycon Systems® manufactures systems with experienced engineers and strong production and processing capacity. By ensuring our products are manufactured to stringent standards, we guarantee that you receive the highest quality products at the most cost effective rates.



2. Innovative assembly method is fast, convenient and secure. Attach clamps, and brackets to rails in one motion with ease.



Aluminum Fixture Block Assembly Illustration

3. Using the special splice kits to connect aluminum rail makes installation easier, more flexible and convenient. Rails can be extended indefinitely improving efficiency, minimizing waste and reducing the overall cost of installation. Splice kits may be fixed to the top or side of the rails.



**Splice Kit Assembly Illustration**



4. Excellent Material Selection, We choose to use Aluminum 6005-T5 on all our aluminum products and stainless steel SUS304 on all our hardware.

5. Designs are compliant with the following standards:

GB50009-2001

GB50011-2001

GB/T 13912-92

GBT 14846-2008

GB-T 6892-2006

GB50429-2007

GB50017-2003

AS NZS 1170

ASCE/SEI 7-05

ASCE/SEI 7-010

2007 California Administrative Code

IBC 2006

Euro Code 8

DIN1055

EN 1991-1-3 - Snow Load

EN 1991-1-4 - Wind Actions

## Cautions

Do not attempt to install system during inclement weather or near power lines. The structure is 100% metal and lightning strikes or accidental contact with high voltage lines can cause serious injury or death.

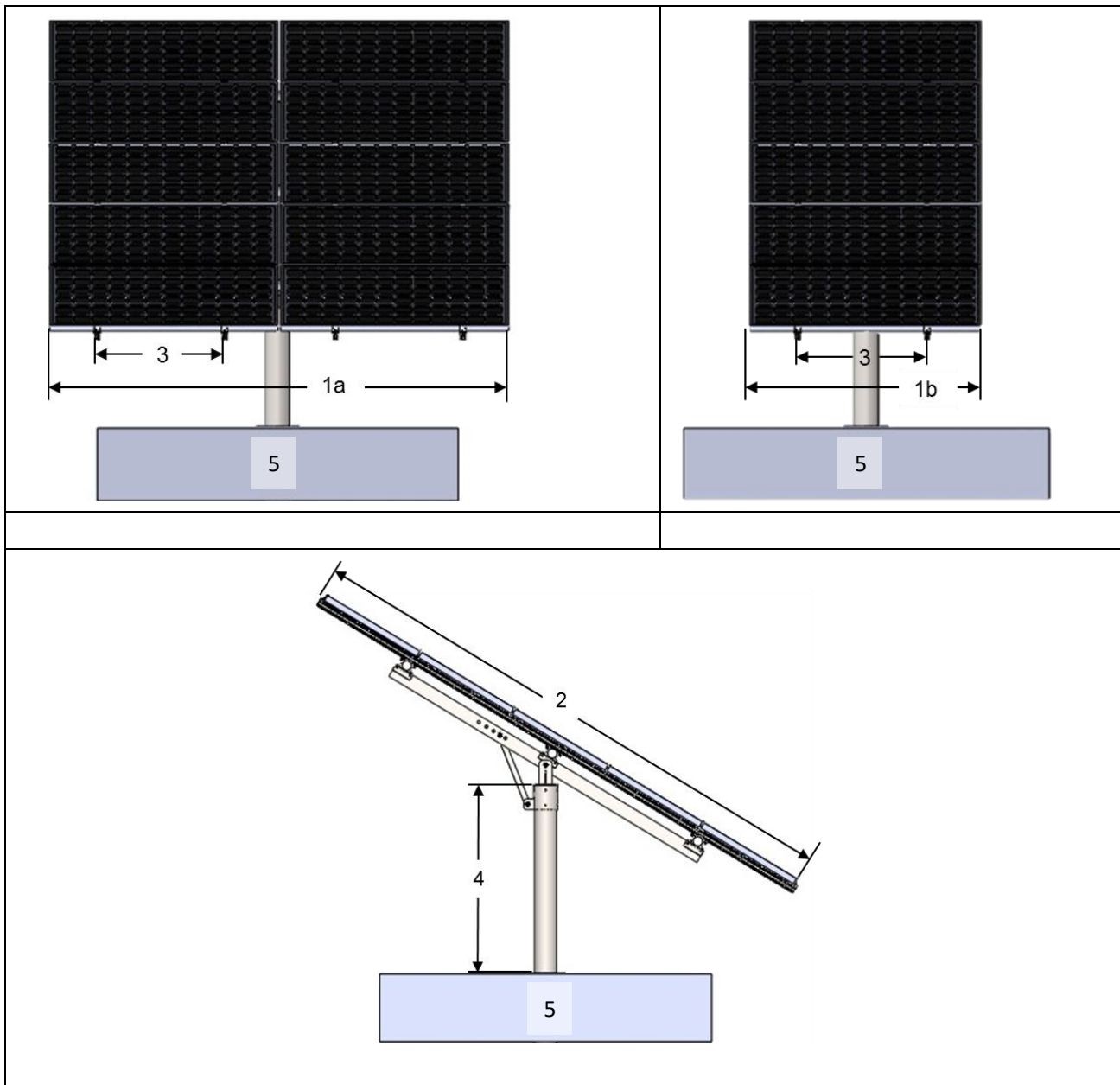
It is recommended to have a minimum of 2 persons on hand during array installation for safety and installation ease.

## Tools

Most hardware is metric, you may want to have both metric and standard tools available.

Hardware	Metric	Torque values	Standard "equivalent"
<b>Socket Head 8mm Bolts</b> (Pole Cap and Module Clamps)	6mm hex key	10Nm (7.4 ft-lbf)	None
<b>U-Brackets 8mm Bolts</b>	13mm wrench	10Nm (7.4 ft-lbf)	1/2"
<b>Beam Flange 12mm Bolts</b>	19mm wrench	35Nm (25.8 ft-lbf)	7/16"
<b>Pivot 18mm Bolts</b> (Angle Adjustment tube and Pole Cap)	27mm wrench	122Nm (90 ft-lbf)	1 - 1/16"
<b>Anchor 24mm Bolts</b>	34mm wrench	234Nm (172 ft-lbf)	1 - 5/16"

## Planning the array layout








### Planning the array layout

1. Array width:
  - a. 4 modules = 3911 mm (154")
  - b. 2 modules = 2006 mm (79")
2. Array height = 2017 mm (79.4")
3. Rail spacing = 955mm +/- 15 mm (37.5" +/- .625)
4. Pole height = 1830mm (72")
5. Concrete footing under pole:
  - a. Min 1200mmD\*600mm SQ (48" D x 24" SQ)

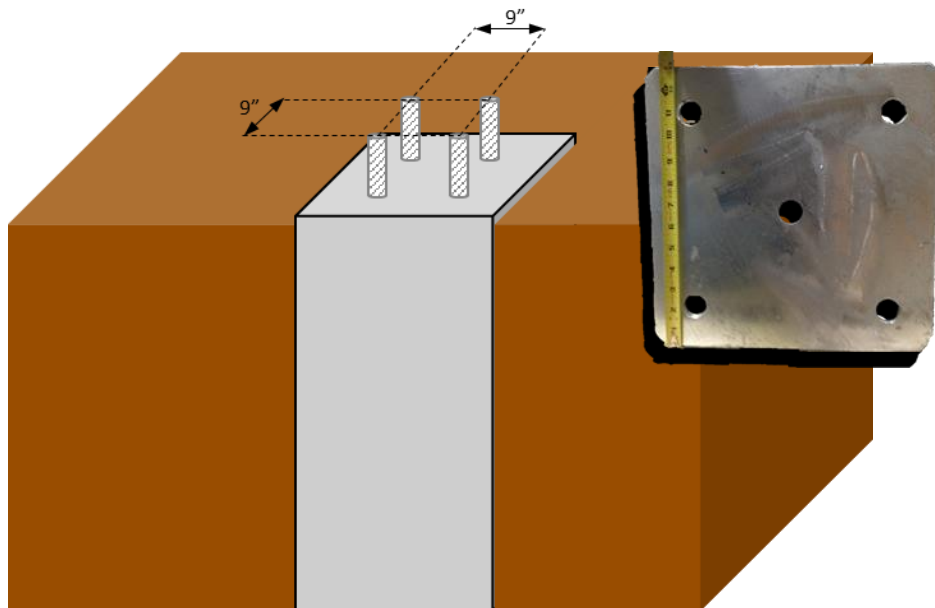
## Components List

S.NO.	Product Name	Picture	Material	Remark	Quantity
1	Rail		AL 6005-T5	1829mm (72") L 254mm(10") L	4 4
1.1	Rail Splice		AL 6005-T5		8
2	End Clamp		AL 6005-T5	Includes: a. one piece of A2-70 M8 Hexagon screw b. one piece of aluminum fixing nut	8
3	Mid Clamp		AL 6005-T5	Includes: a. one piece of A2-70 M8 Hexagon screw b. one piece of aluminum fixing nut	4
4	Pole Cap		Q235	Includes: a. Six pieces of A2-70 M8 Hexagon screws	1
5	Angle adjustment arm		Q235	Includes, 1x M18 x 90mm & 1x M18 x 130mm; both with stainless steel hex bolt, flat washers, spring washers, and nuts	1

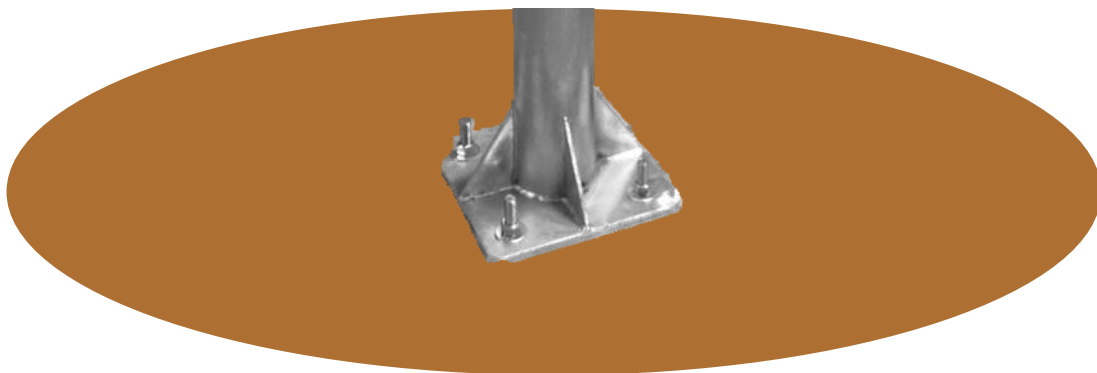
6	U - Bracket		Q235	Includes: a. Two pieces of M8*30 stainless steel hex bolts, flat washers, spring washers, and nuts	4 with bonding plate 4 without bonding plate
7	Square Girder		Q235		1
8	Beam <b>HOP-BEA</b>		Q235	Structural tube with flange. Includes 8x M12 stainless steel bolts with washer, lock washer and nut	2x 1499mm (59") 2x 1098mm (43.25")
9	Pole		Q235	Pole base	1
10	J bolt		Q235	25 x 355mm (1" x 14") galvanized concrete anchor bolts	4

## Installation Steps

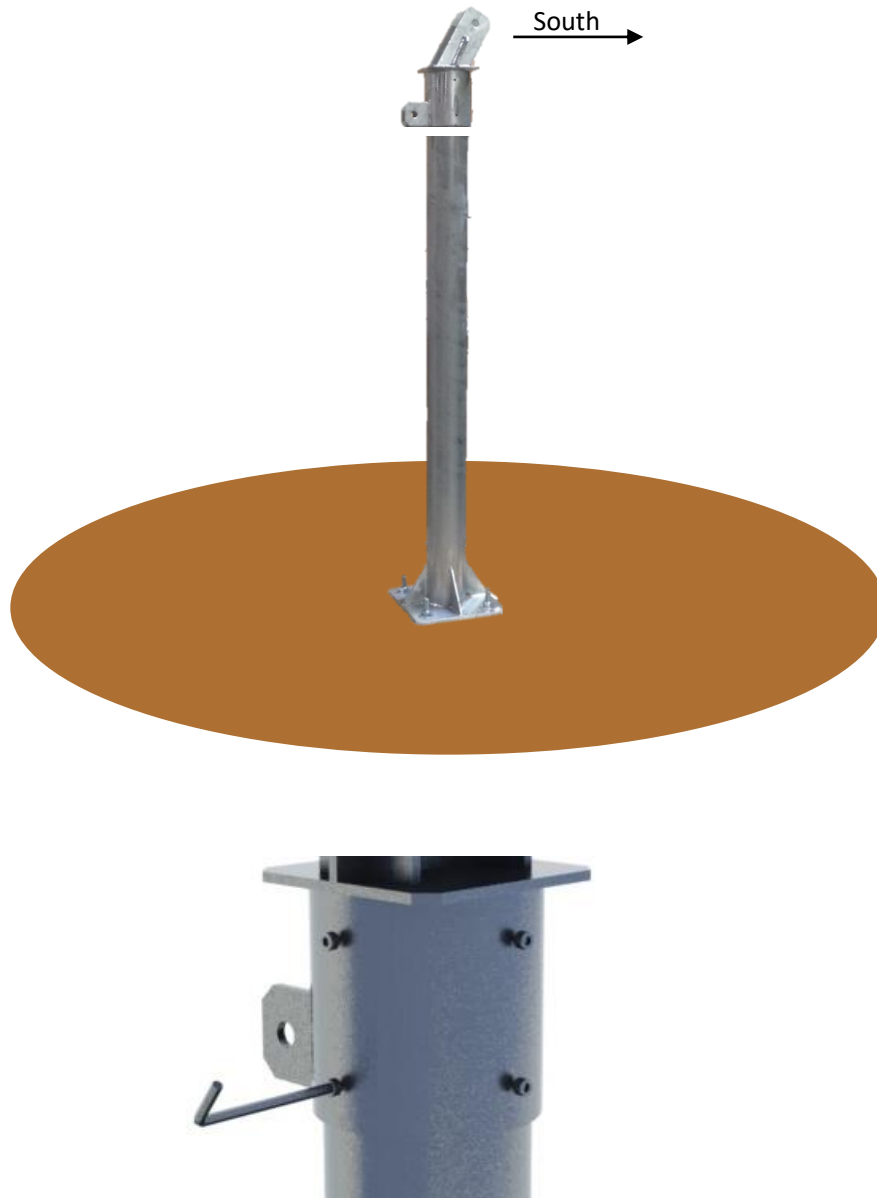
1. Use the 4 J bolts provided cast into a concrete foundation suitable for the location and the expected loads on the structure. Minimum recommended is 1200mm (48") Deep and 600mm (24") square, or about 0.453m<sup>3</sup> (16 cubic ft.) The foundation may vary depending on soil and location. It is recommended, 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.



2. Place the Pole base on the foundation, aligning the bolt holes with the protruding bolts. Ensure that the post is plumb vertical with a level. Use the provided nuts, lock washers, and washers and tighten the nuts and ensure the post is secured to the foundation.



3. Place the Pole Cap level on the Pole and position as desired. Angled cradle flanges should point towards the equator or the direction of greatest solar insolation for your site. Tighten the 6x M8 socket head bolts to maintain the correct position.



4. Place the square girder in the cradle flanges and fasten with the M18 x 150mm supporting bolt and nut.



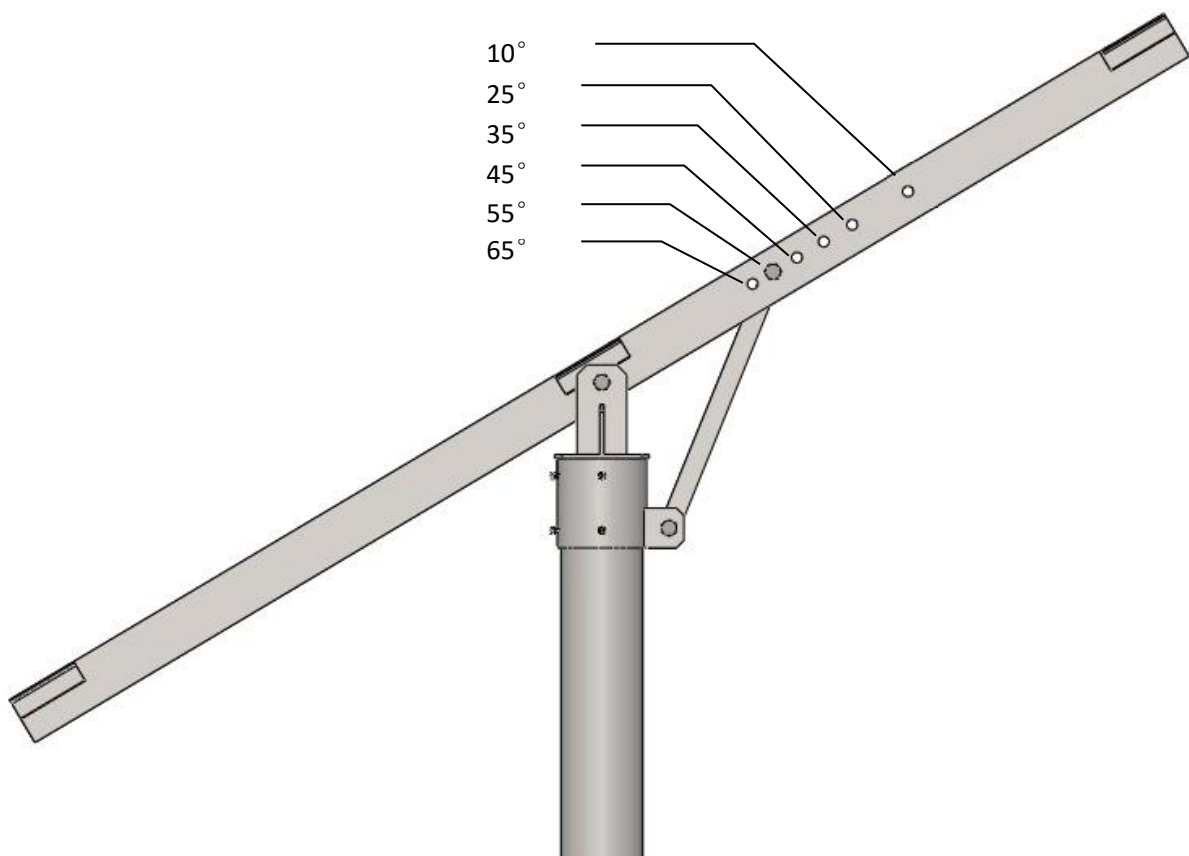
5. Place the angle adjustment arm between the Square Girder and the Tube Cap. Fasten arm to

**Tube Cap with the supporting M18 x 90mm bolt and nut. Fasten arm to square girder with the supporting M18 x 130mm bolt and nut.**

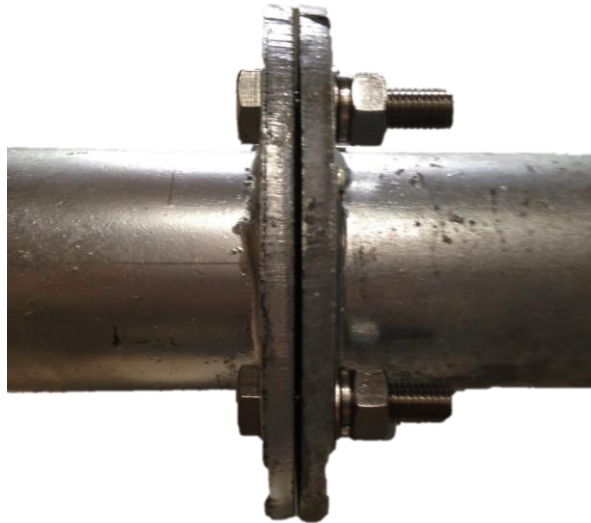




**Adjust the angle of elevation by attaching the angle adjusting arm in the hole location corresponding to the required angle. Please refer to the illustration below. Installation process may be easier at the 10° angle, and carefully may be adjusted after construction is complete.**



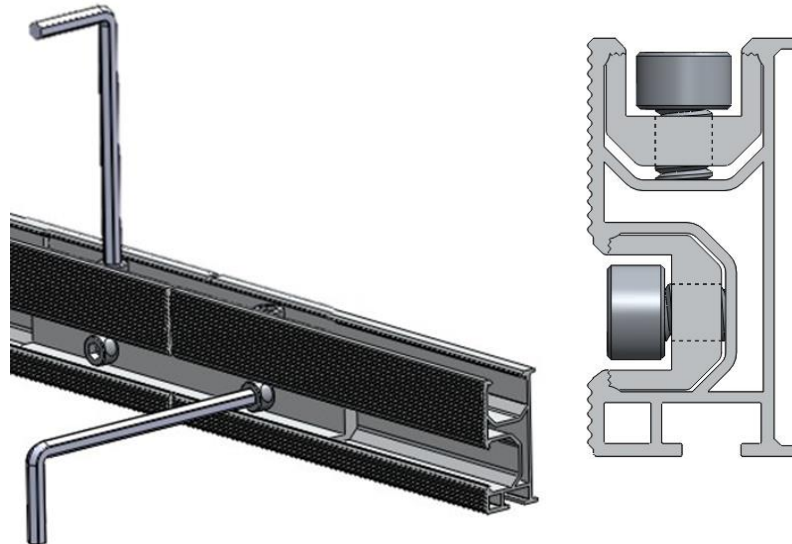
5. For a two module mount, only two 1499mm (59") Beams are required. For a four module mount, two 1499mm (59") and two 1098.5mm (43.25") Beams are connected at the flange using the supplied bolts as below.



6. Place the Beam across the flanges on the Square Girder at the welded mounting plates and fasten with two U-brackets. Care should be taken to ensure that the tube beam is centered and level on the square girder. Beams should be parallel.



7. The mounting Rails come in two pieces for easier shipping. Utilize the splices provided to recombine the rails to be the full length. Although not required, it is recommended to utilize a splice in both the side channel and the top channel of the rail for greater strength.



8. Slide the U-bracket bolts into the slot on the underside of the rail.\* Guide the ends of the tube struts through the U-brackets and position. Each rail requires two U-brackets, one of the two brackets should utilize the bonding plate to form the equipment bond between the anodized aluminum rail and the steel structure so all metal parts are electrically bonded to Earth Ground (EG, ⚡).

*\*Note: T head bolts may be provided to replace the hex head bolts. These can be inserted anywhere along the channel and may make installation slight adjustments easier.*



9. Care should be taken to make sure that the ends of the rails line up by using a long straight edge or snap line. Arrows found on the rails should line up with one of the tube struts. The farthest outside rails should line up right on the tube edge. The inner rails should be no less than 1003mm (39.5") on center from the outer rails.

**NOTE:** Image below may show a three rail option, the 4 and 2 module mount solution provided only require 2 Tube struts

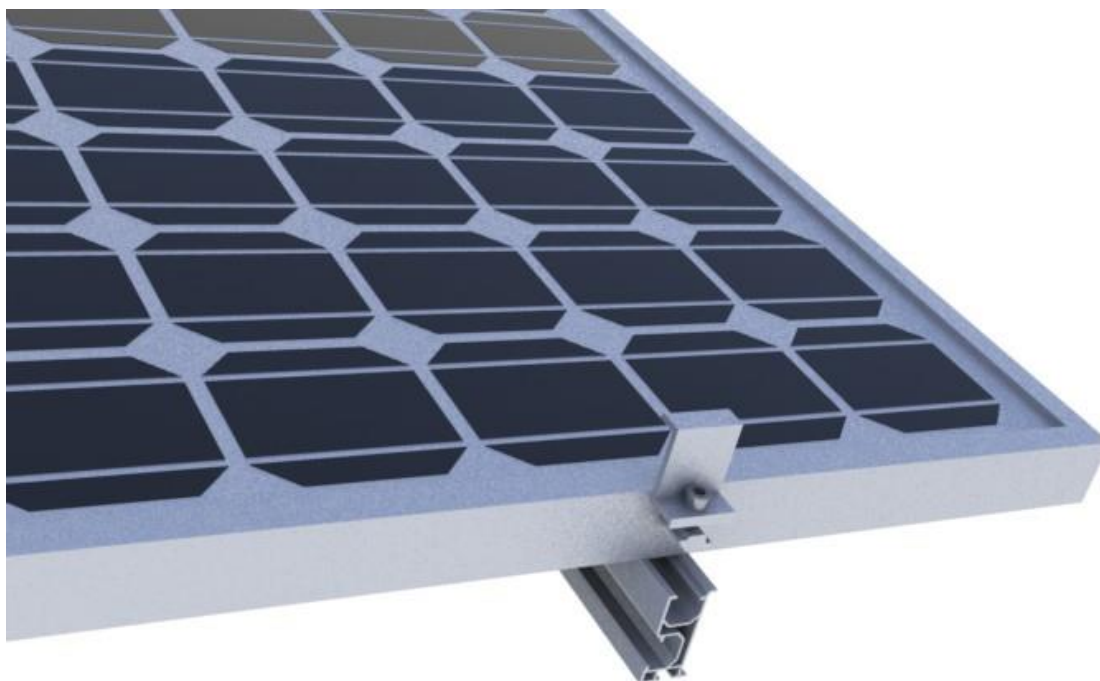


Be sure that the grid is square prior to tightening the U-brackets.





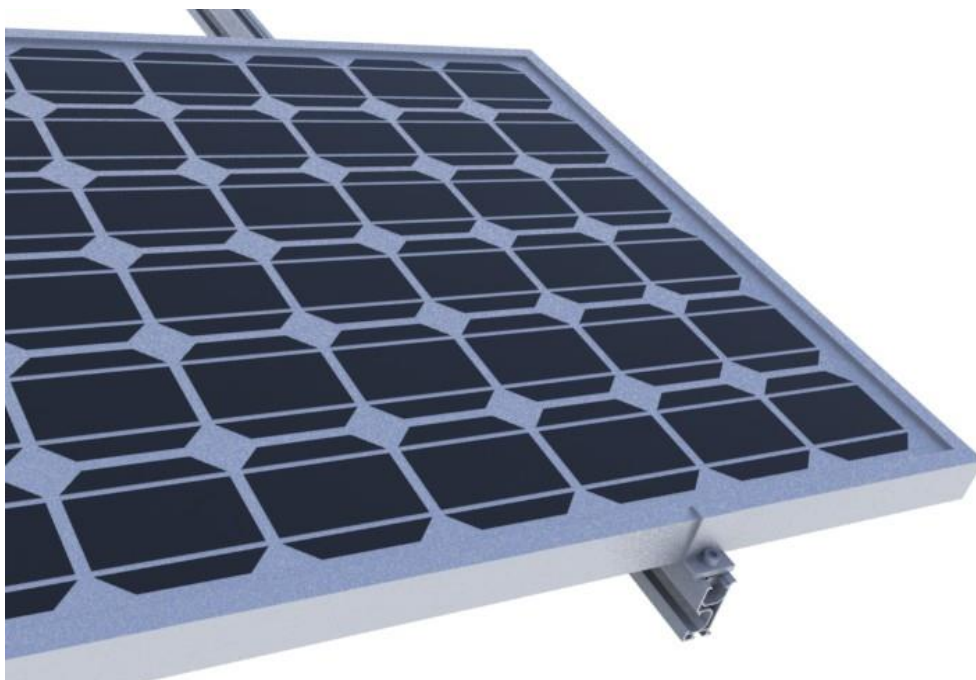
**10. Place solar panels on the rails.**



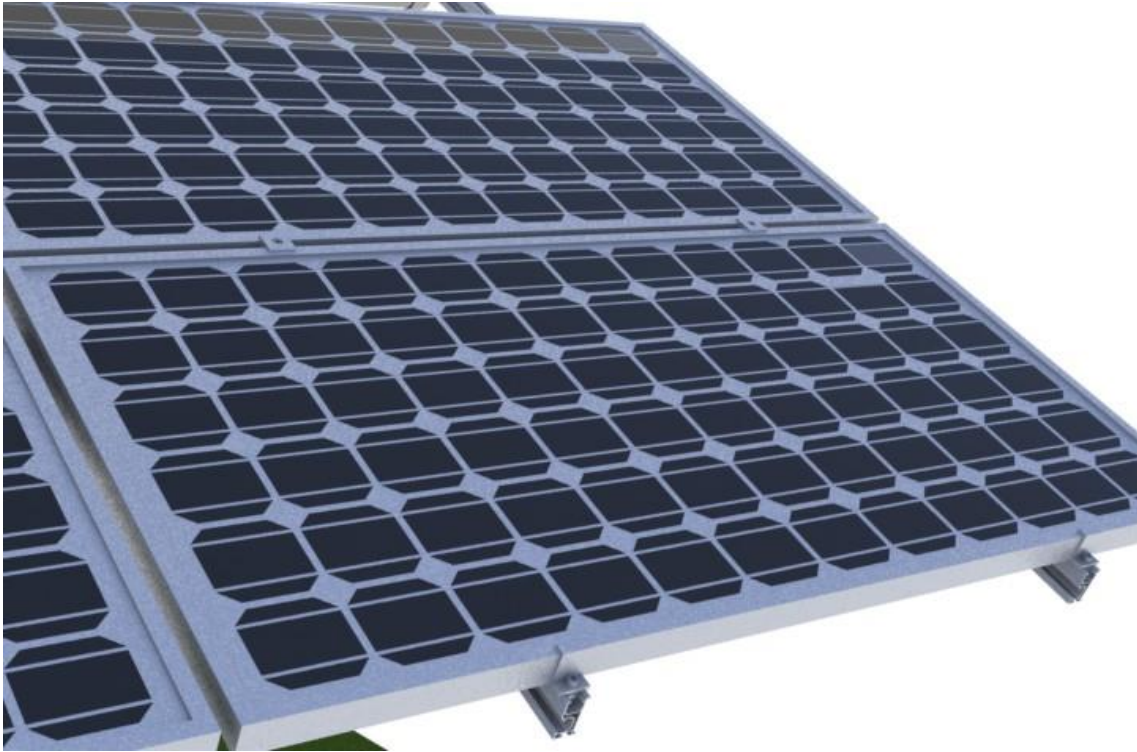
**11. Use end clamps with M8x25mm Hexagon screw and fixing nuts (preassembled) to attach**

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solar panels to the rails. Be sure first row of modules are aligned and square with the rail grid before tightening. A minimum of 6mm (0.25") is required between modules. For aesthetics, you may want to use a mid-clamp as a temporary spacer between the modules in a row for a consistent module gap in the array.



Adjacent solar panels in columns are attached by using mid-clamps with M8 socket head bolts clamping both module frames. Be sure that the stainless steel bonding plate included with the mid-clamp is situated between the module (panel) frame and the mounting rail. The bonding plates are required to break the protective anodizing of the aluminum and ensure a continuous equipment bond of all metallic components to Earth Ground (EG, Ⓢ).



12. Repeat steps until installation is complete, top row will utilize end clamps as the first row.
13. Adjust the tilt and direction as required for the site and tighten all bolts to final torque upon completion.



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