

VE-TPM4



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

Note: Most hardware is Metric. You may want to have both Metric and Standard tools available

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

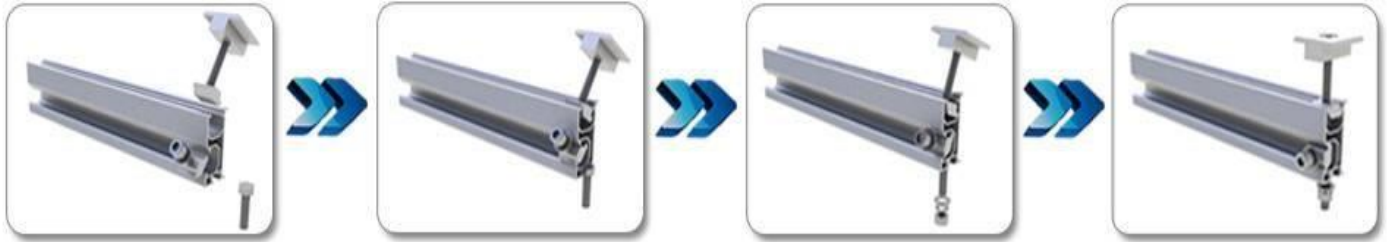
Components List

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 tube		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 HOP-BEA		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

Aluminum Fixture Block Assembly

Attach clamps, and brackets to rails:



Splice Kit Assembly

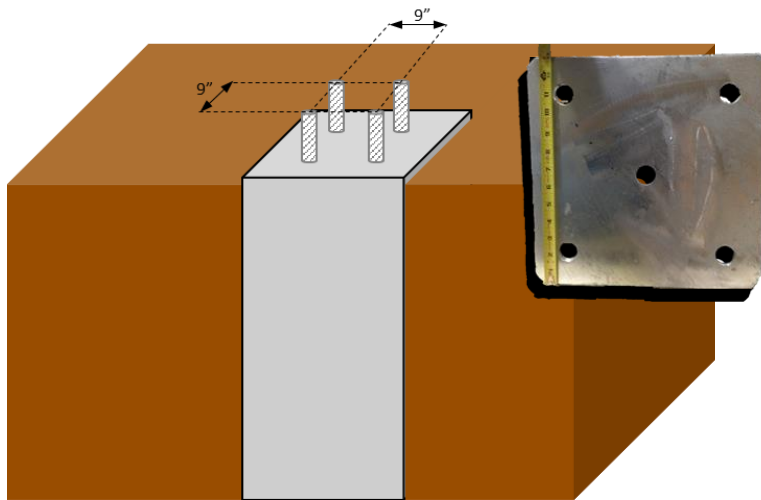
Use the special splice kits to connect the aluminum rails. Rails can be extended indefinitely. Splice kits may be fixed to the top or side of the rails:



Installation Steps

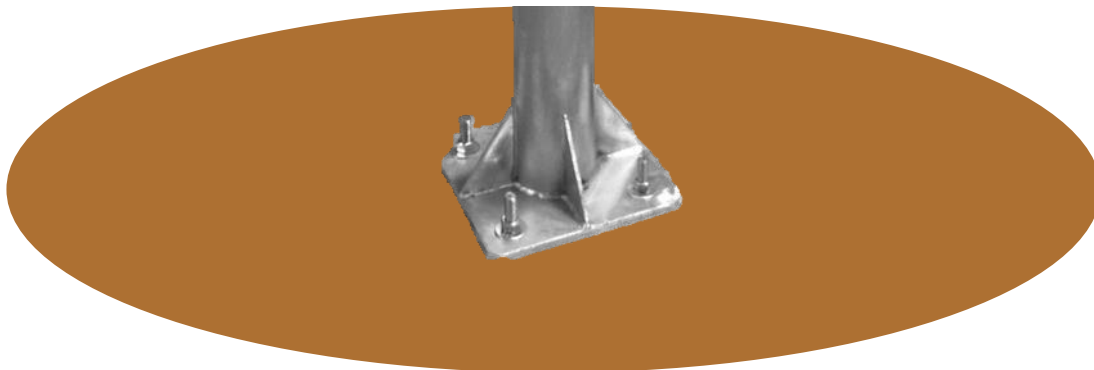
Step 1

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 720cm³ (8 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.



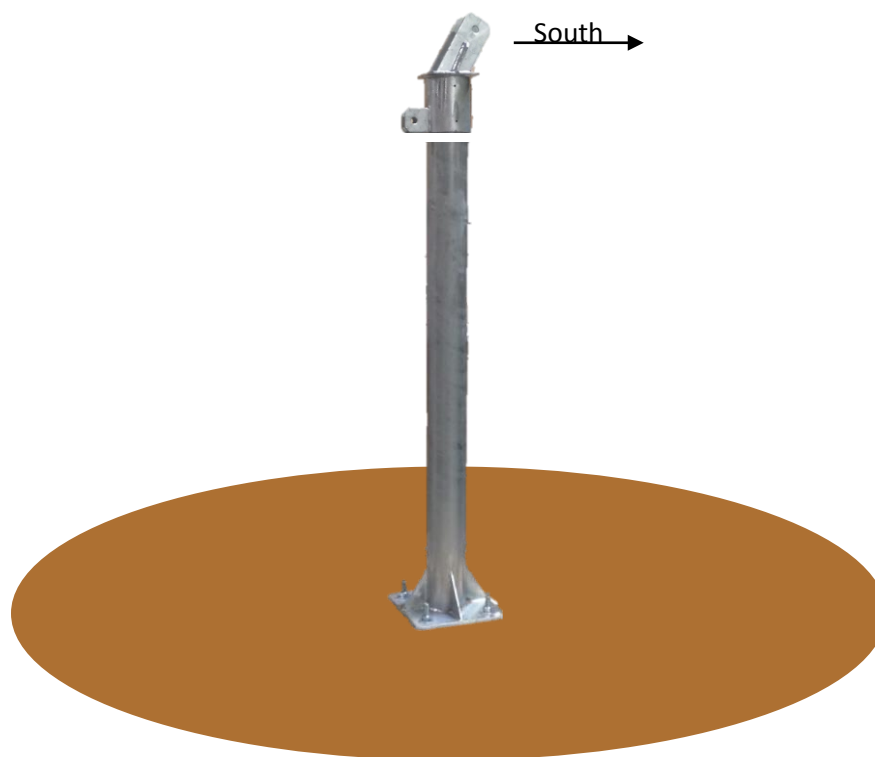
Step 2

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.



Step 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 8x M8 socket head bolts to maintain the correct position.



Step 4

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



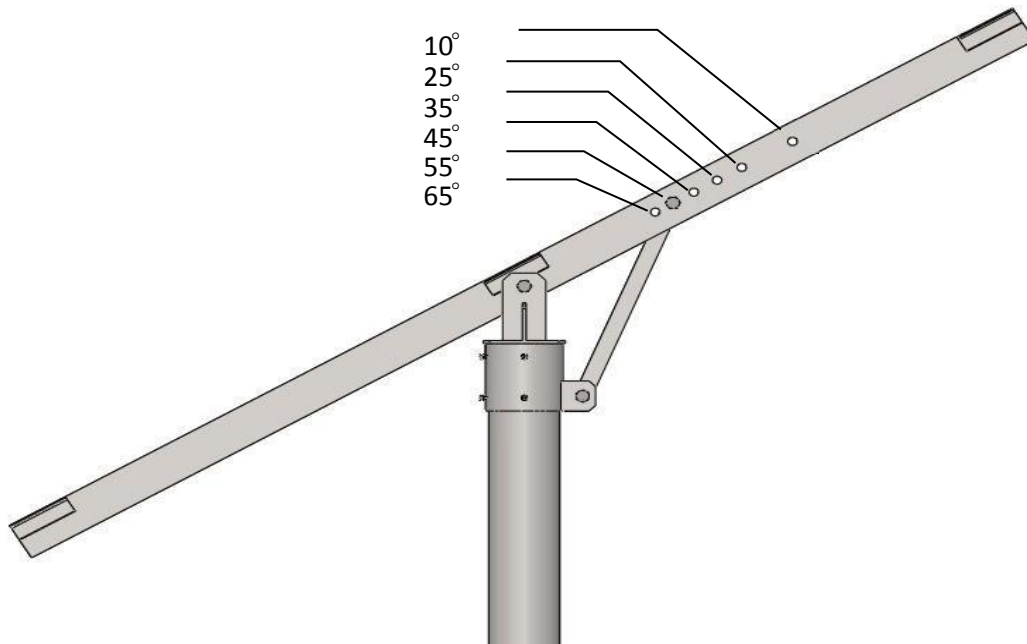
Step 5

Place the angle adjustment tube between the pole and the tube cap. Fasten arm to post with the supporting M18 x 130mm bolt and nut. Fasten arm to square girder with the supporting M18 x 90mm bolt and nut.



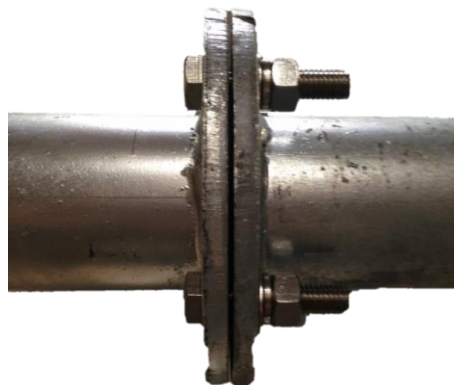
Step 6

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.



Note

For a two module mount, only the 1499mm (59") Beam is required. For a four module mount, one 1499mm (59") and one 1098.5mm (43.25") Beam must be connected by the flange and the supplied bolts as below.



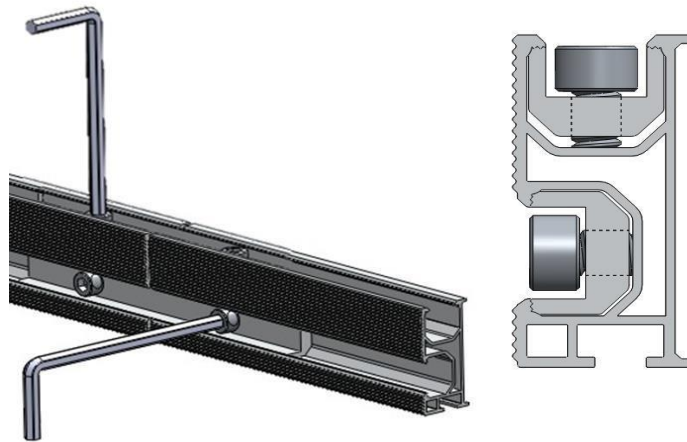
Step 7

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.



Step 8

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.

**Step 9**

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, \oplus).

**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.*



Step 10

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

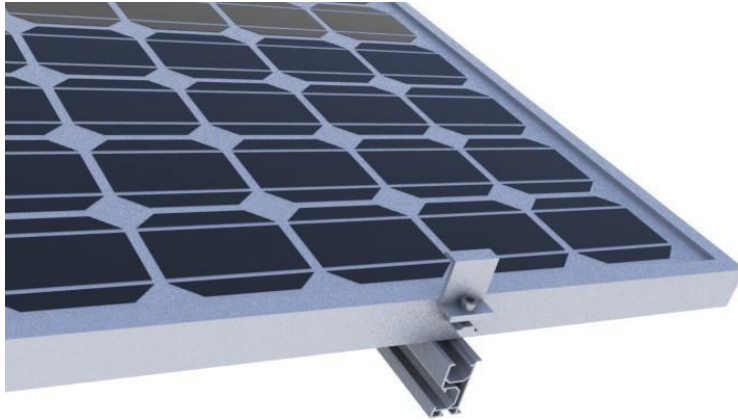


Note: Be sure that the grid is square prior to tightening the U-brackets.

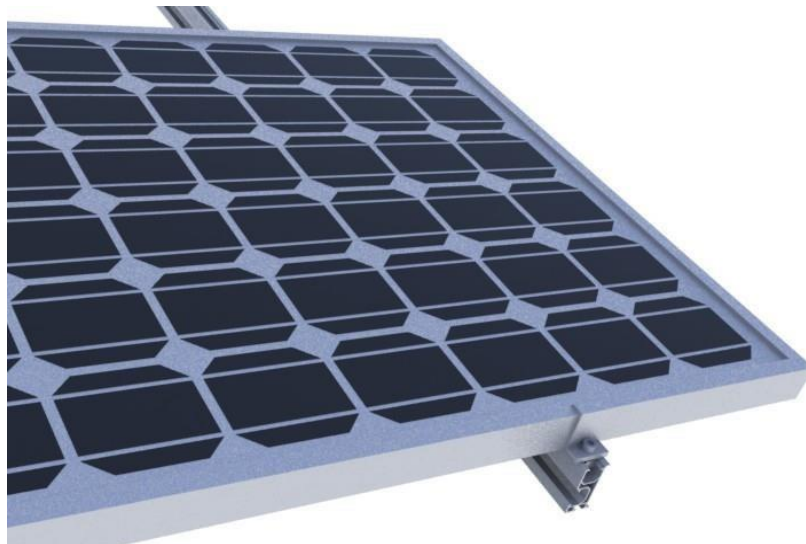


Step 11

Place solar panels on the rails.

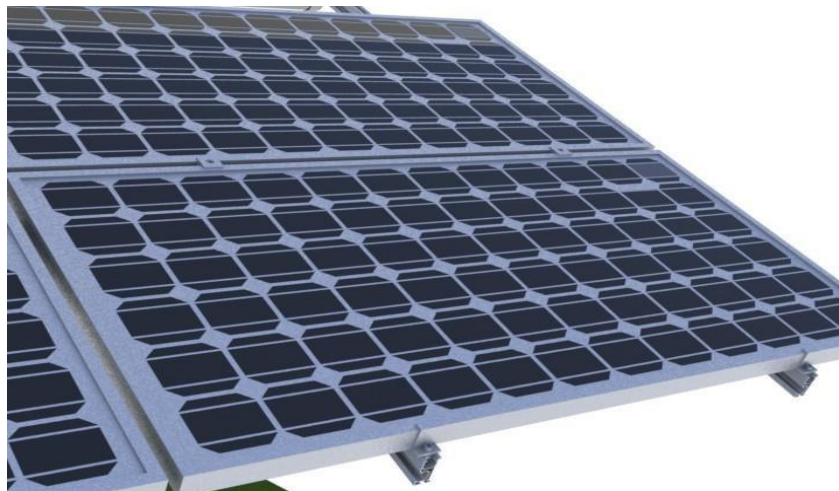
**Step 12**

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



Note

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, ⚡).

**Step 13**

Repeat steps until installation is complete, top row will utilize end clamps as the first row.

Step 14

Adjust the tilt and direction as required for the site and tighten all bolts to final torque upon completion.



4774 S. Hwy 191
Suite #5
Rexburg, ID 83440