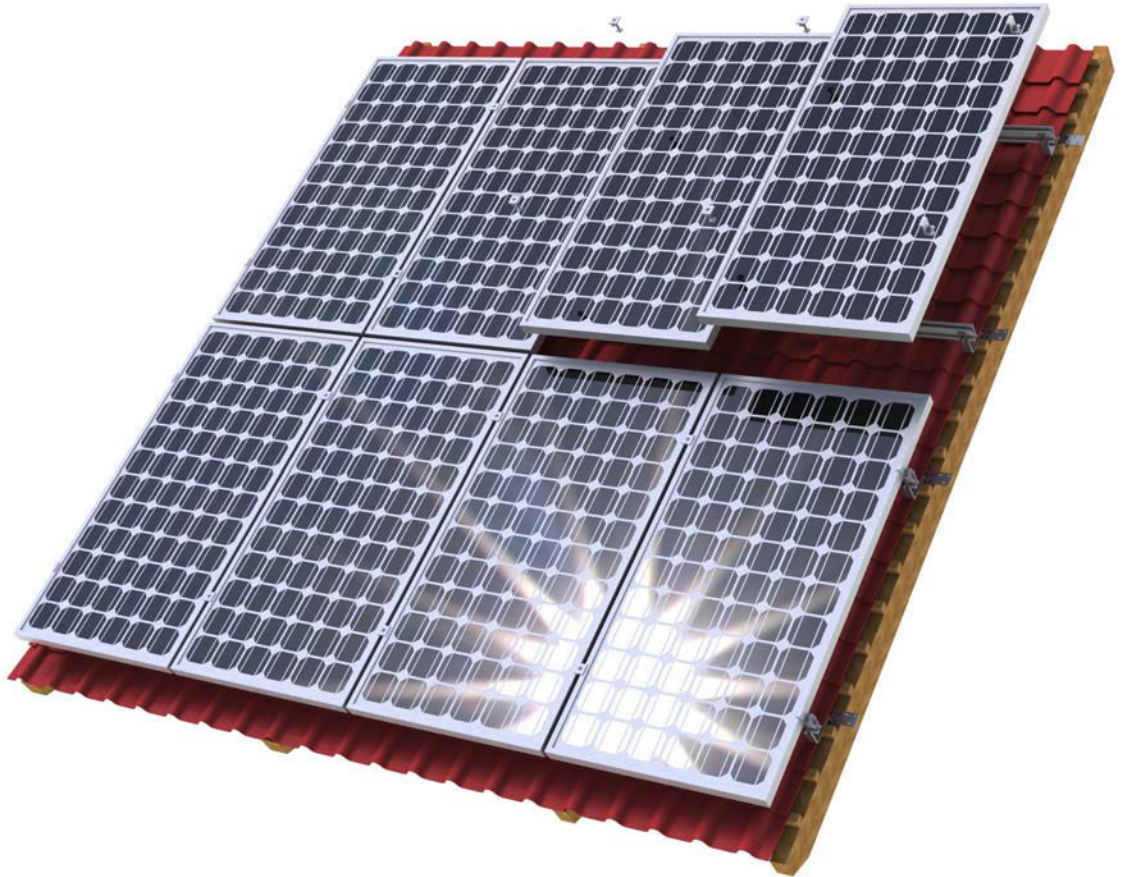


Roof Mounting System Installation Manual

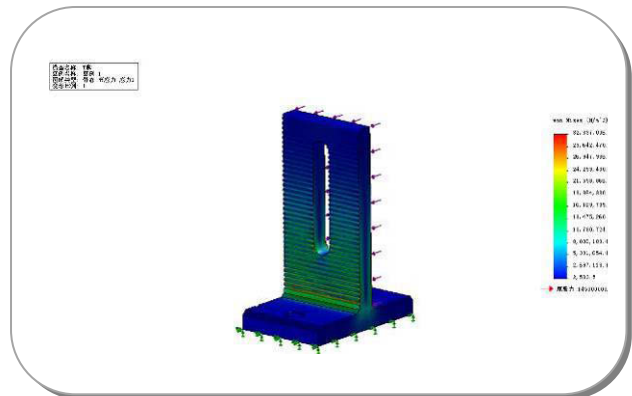
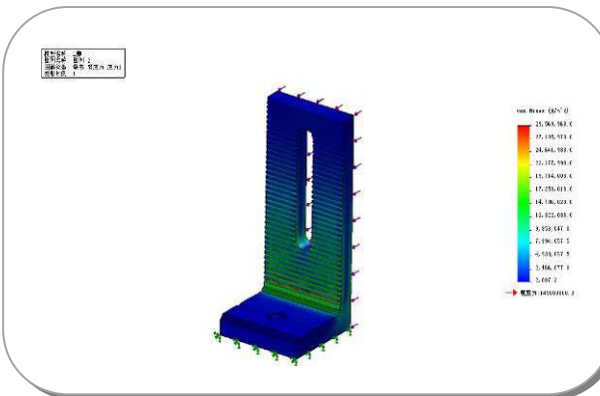
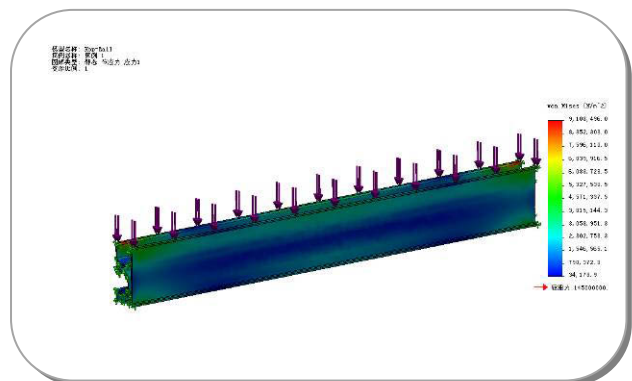
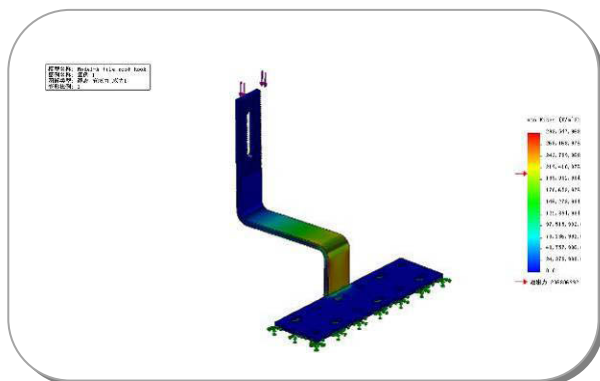




Thank You For Choosing Hopergy!

Why Hopergy

1. Hopergy is a professional supplier, specialising in PV mounting systems. We have 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. Hopergy's innovative assembly method is fast, convenient and secure. Attach clamps, and brackets to rails in one motion with ease.



Aluminium Fixture Block Assembly Illustration

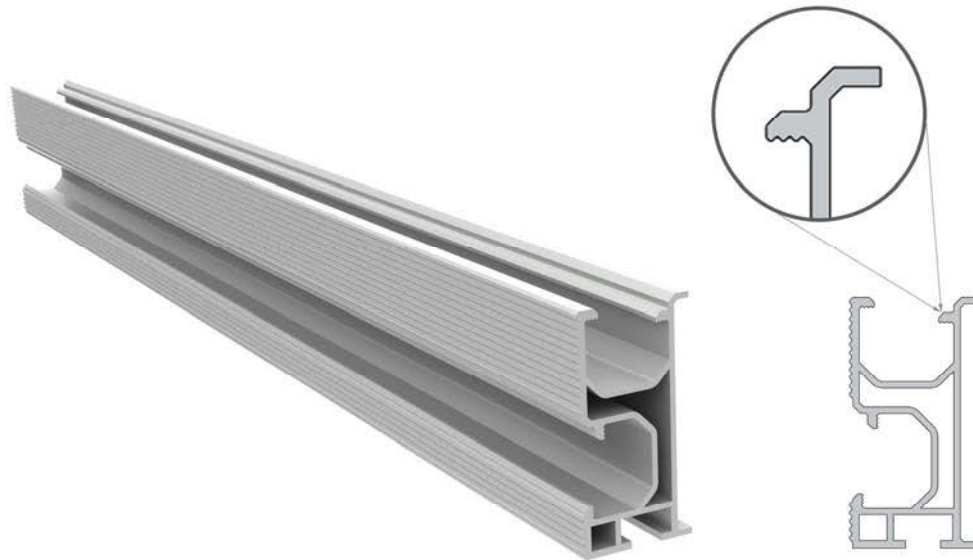
3. Using the special splice kits to connect Hopergy's aluminium rail makes installation easier, more flexible and convenient. Rails can be extended indefinitely improving efficiency, minimising wastage and reducing the overall cost of installation. Splice kits may be fixed to the top or side of the rails.



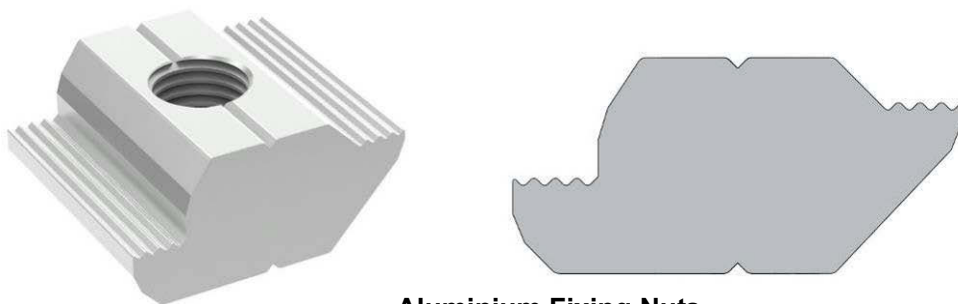
Splice Kit Assembly Illustration



4. The corrugated surfaces on both the rails and roof hooks ensure the secure connection of these parts. The loop design maximises and distributes rail strength evenly throughout the length of the rails. The rails have three openings which make them compatible with a large variety of roof hooks.



Aluminium Rails



Aluminium Fixing Nuts

5. Excellent Material Selection. We choose to use aluminium 6005-T5 on all our aluminium products and stainless steel SUS304 on all our Tile hooks, bolts, nuts etc.

6. Our 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

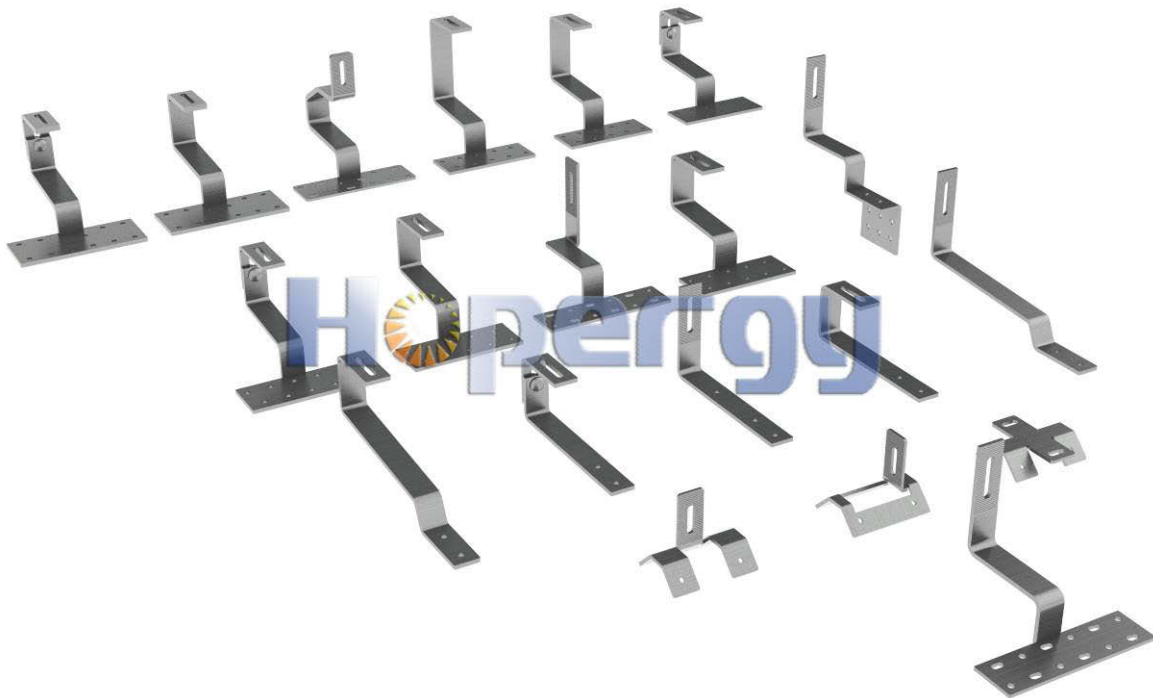
Euro Code 8

DIN1055

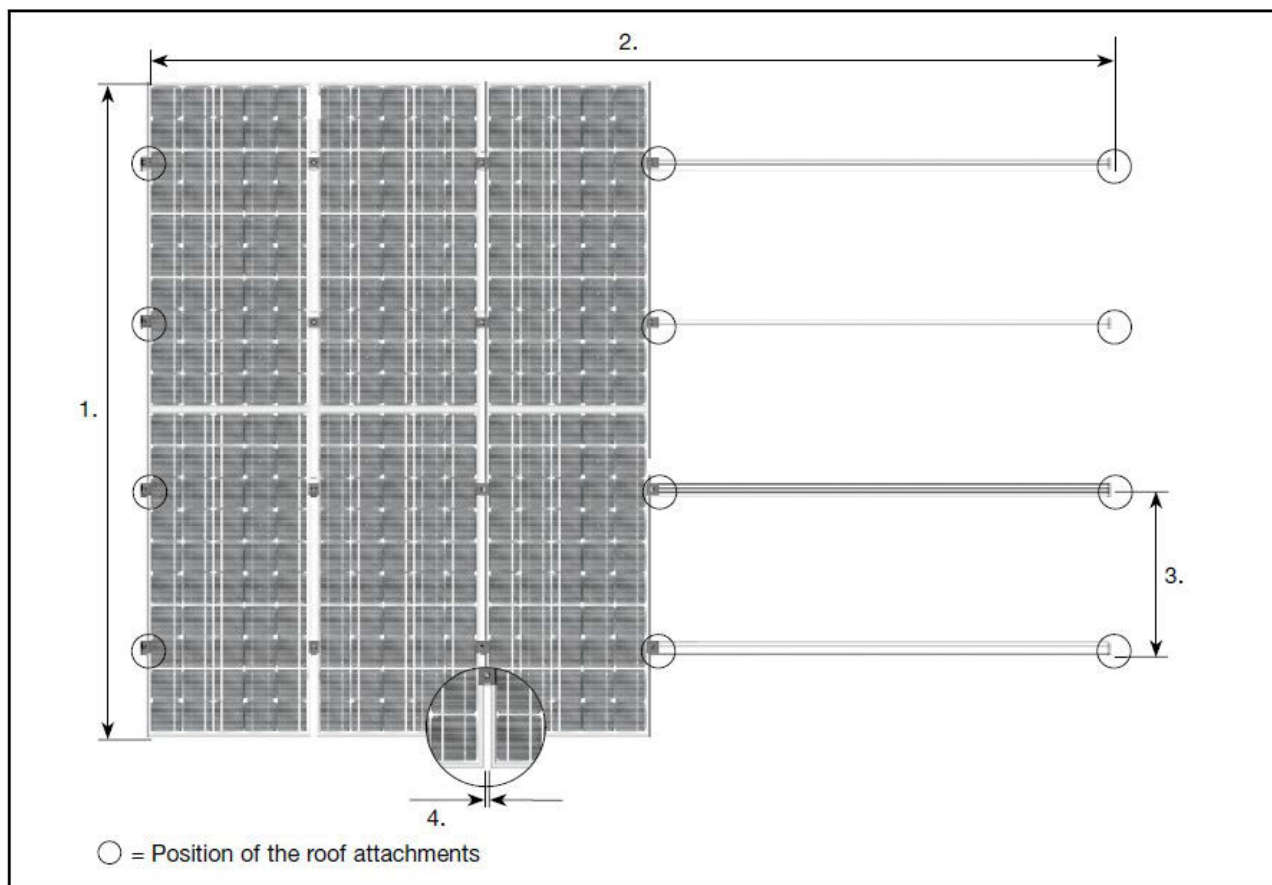
EN 1991-1-3 - Snow Load

EN 1991-1-4 - Wind Actions

7. Our strong production processing ability makes it possible for us to offer competitive pricing and punctual delivery. We can supply most of our low-cost products within short timeframes. We also have the ability to customise products according to different clients' requirements, as well as being able to provide OEM services.



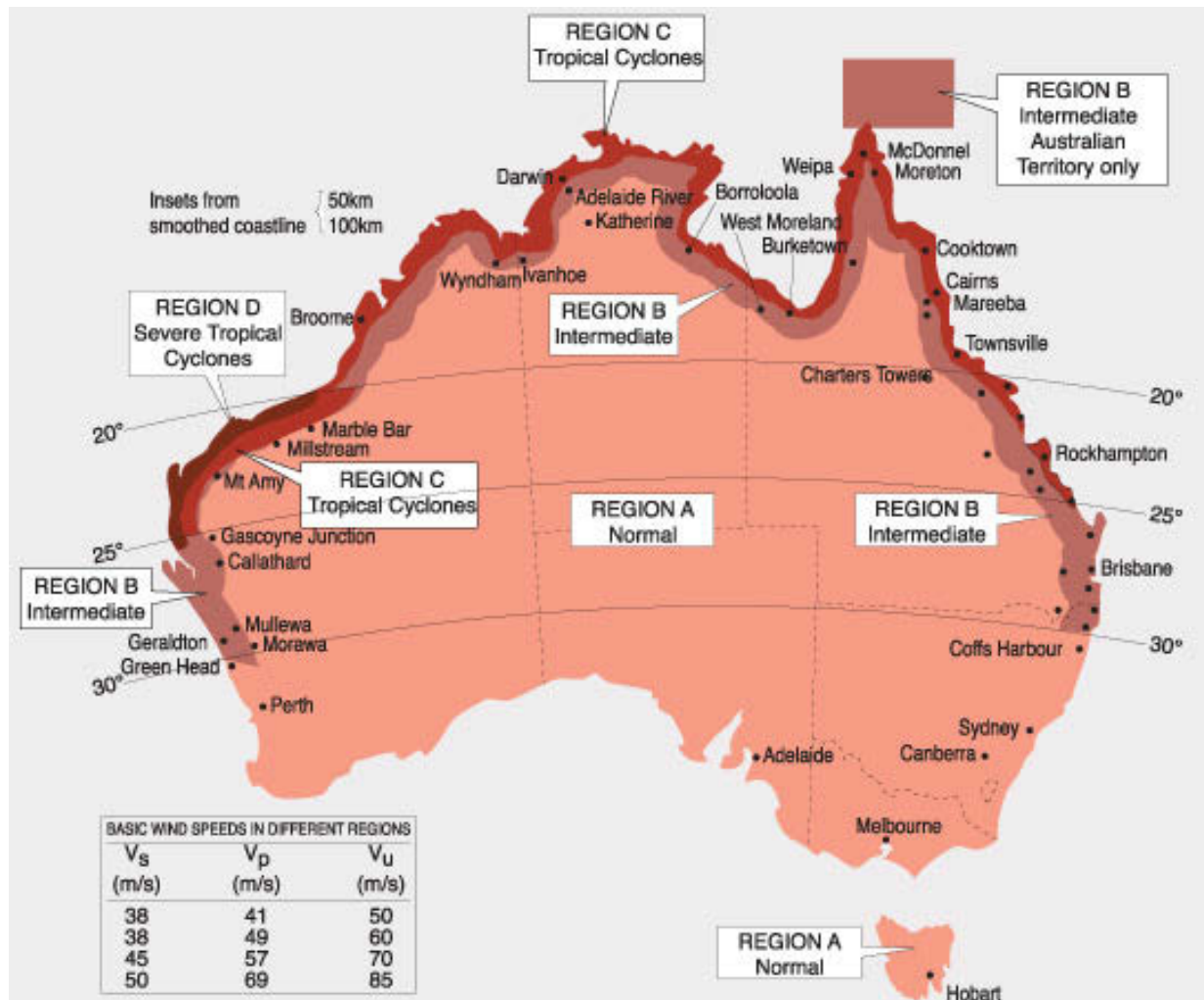
Planning the array layout



Planning the array layout

1. Array height = number of modules in the vertical direction x module height
2. Array width = number of modules in the horizontal direction x (module width + 11/16 in (18 mm)) + 1-1/4 in (32 mm)
3. Vertical spacing between the roof fixings for the supporting rail = approx. ½ of module height
4. Distance between the modules = 11/16 in (18 mm)

Determine the Maximum Rail Support Spacing



I . Please use the following table to determine the base rail support spacing for tiled roof installations for Australia A,B,C and D wind zones:

Table 1 for local Pressure Factor $K_e = 1.0$				
1600 Long Panels fixed to Tiled Roof				
Installation	Region A	Region B	Region C	Region D
Height	Spacing(mm)	Spacing(mm)	Spacing(mm)	Spacing(mm)
5 Meters	2130	1690	1380	1080
10 Meters	1940	1540	1260	990
15 Meters	1840	1460	1190	940
20 Meters	1740	1380	1130	890

Table 2 for local Pressure Factor $K_l = 1.0$				
1960 Long Panels fixed to Tiled Roof				
Installation	Region A	Region B	Region C	Region D
Height	Spacing(mm)	Spacing(mm)	Spacing(mm)	Spacing(mm)
5 Meters	1760	1620	1280	1000
10 Meters	1630	1490	1210	900
15 Meters	1570	1420	1130	780
20 Meters	1540	1380	1070	750

Table 3 Near the roof edge Local Pressure Factor $K_l = 2.0$				
1600 Long Panels fixed to Tiled Roof				
Installation	Region A	Region B	Region C	Region D
Height	Spacing(mm)	Spacing(mm)	Spacing(mm)	Spacing(mm)
5 Meters	1400	930	690	530
10 Meters	1150	780	630	490
15 Meters	1050	720	540	440
20 Meters	1000	680	490	390

Table 4 Near the roof edge Local Pressure Factor $K_l = 2.0$				
1960 Long Panels fixed to Tiled Roof				
Installation	Region A	Region B	Region C	Region D
Height	Spacing(mm)	Spacing(mm)	Spacing(mm)	Spacing(mm)
5 Meters	1450	960	710	450
10 Meters	1190	780	640	410
15 Meters	1080	710	560	360
20 Meters	1020	670	500	320

- The Tile roof hooks should be fixed to the rafter using a minimum of three $\Phi 6.3$ x80mm wood screws.

II. Please use the following table to determine the base rail support spacing for metal sheet roof installations for Australia A,B,C and D wind zones:

Table 1 for local Pressure Factor $K_{\ell} = 1.0$ 1600 to 1960 Long Panels fixed to Metal Sheet Roof		
Installation	Region A & B	Region C & D
Height	Spacing(mm)	Spacing(mm)
5 Meters	1320	750
10 Meters	1200	680
15 Meters	1140	590
20 Meters	1080	530





Table 2 Near the roof edge Local Pressure Factor $K_{\ell} = 2.0$ 1600 to 1960 Long Panels fixed to Metal Sheet Roof		
Installation	Region A & B	Region C & D
Height	Spacing(mm)	Spacing(mm)
5 Meters	730	350
10 Meters	600	310
15 Meters	540	270
20 Meters	510	240


- The L Feet should be fixed to the purlins using $\Phi 6.3 \times 80$ mm screws through the sheet metal roofs using the gasket for galvanic separation.
- The above spacings apply for fixing through thin sheet metal purlins (greater than 1mm thickness) or a minimum embedment of 50mm into timber purlins.

III. Following design criteria has been used for the structural verification.

Design Life	25 years.
Importance Level	Type 2: Ordinary.
Annual Probability of exceedance	1/250.
Terrain Category to AS1170.2	2.
Service Deflection	Not limited.
Minimum pitch for Tiled Roof	15 degrees.
Aluminum Rails	6005 - T5.
Maximum dimensions of Solar Panels.	
● 27 KG Panel	1960 × 1100
● 23 KG Panel	1650 × 1100
● 16 KG Panel	1610 × 860

Components List

S.NO.	Product Name	Picture	Material	Remark
1	Aluminium Rail		AL 6005-T5	
2	End Clamp		AL 6005-T5	Includes: a. one piece of A2-70 M8 Hexagon screw b. one piece of Aluminium fixing nut
3	Mid Clamp		AL 6005-T5	Includes: a. one piece of A2-70 M8 Hexagon screw b. one piece of Aluminium fixing nut
4	Tile Roof Hook		SUS 304	Includes: a. three pieces of $\Phi 6.3\text{mm} \times 80\text{mm}$ wood screws b. one piece of Aluminium fixing nut c. one piece of A2-70 M8 Hexagon screw d. one piece of M8 antiskid washer e. one piece of M8 spring washer The picture shows just one type of tile roof hook. We offer a range of tile hooks for your choice. Please see our installation manual P17-19.

5	L Feet		<p>Includes:</p> <ul style="list-style-type: none"> a. one piece of $\Phi 6.3\text{mm} \times 80\text{mm}$ wood screw b. one piece of Aluminium fixing nut c. one piece of A2-70 M8 Hexagon screw d. one piece of M8 antiskid washer e. one piece of M8 spring washer f. one piece of EPDM waterproof gasket <p>The picture shows just one type of metal sheet roof hook. We offer a range of metal sheet roof hooks for your choice. Please see our installation manual P19-22.</p>
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Installation Steps

1. Remove or slide the tile from the roof girder slightly, and place the roof hook on the wooden rafter (refer to the picture below), Fix the roof hooks using three wooden screws. Grind tile as required and replace.





2. Use the M8*25 Hexagon screw, M8 spring washer, M8 antiskid washer and fixing nut to connect the rail to the Tile Hook.

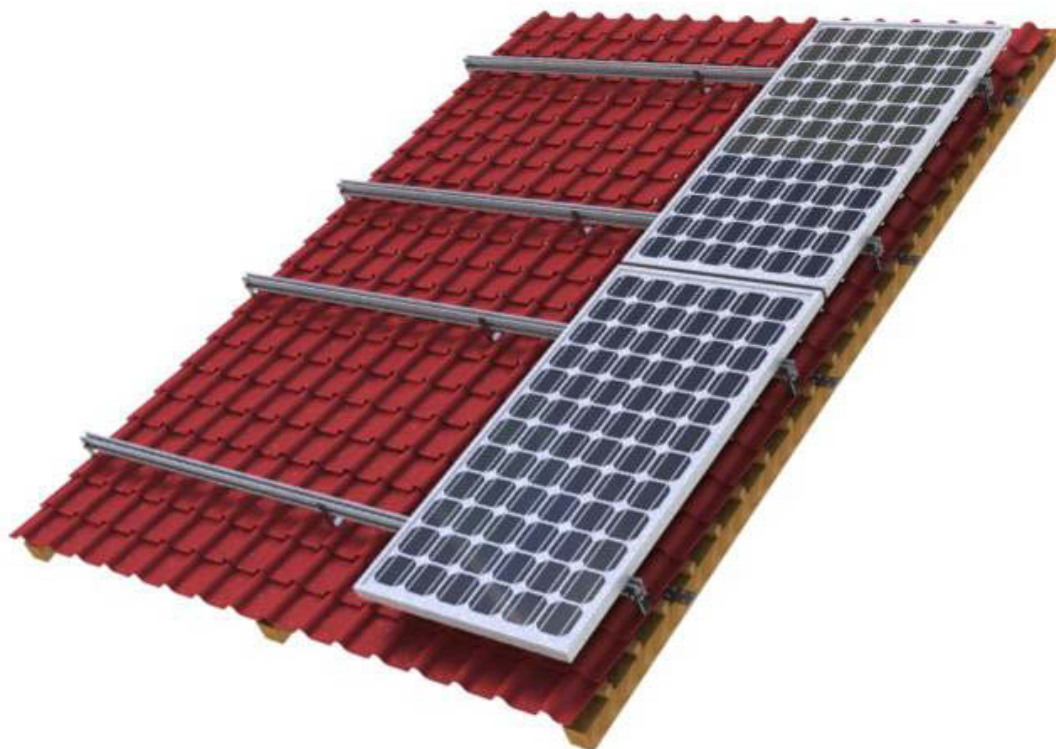




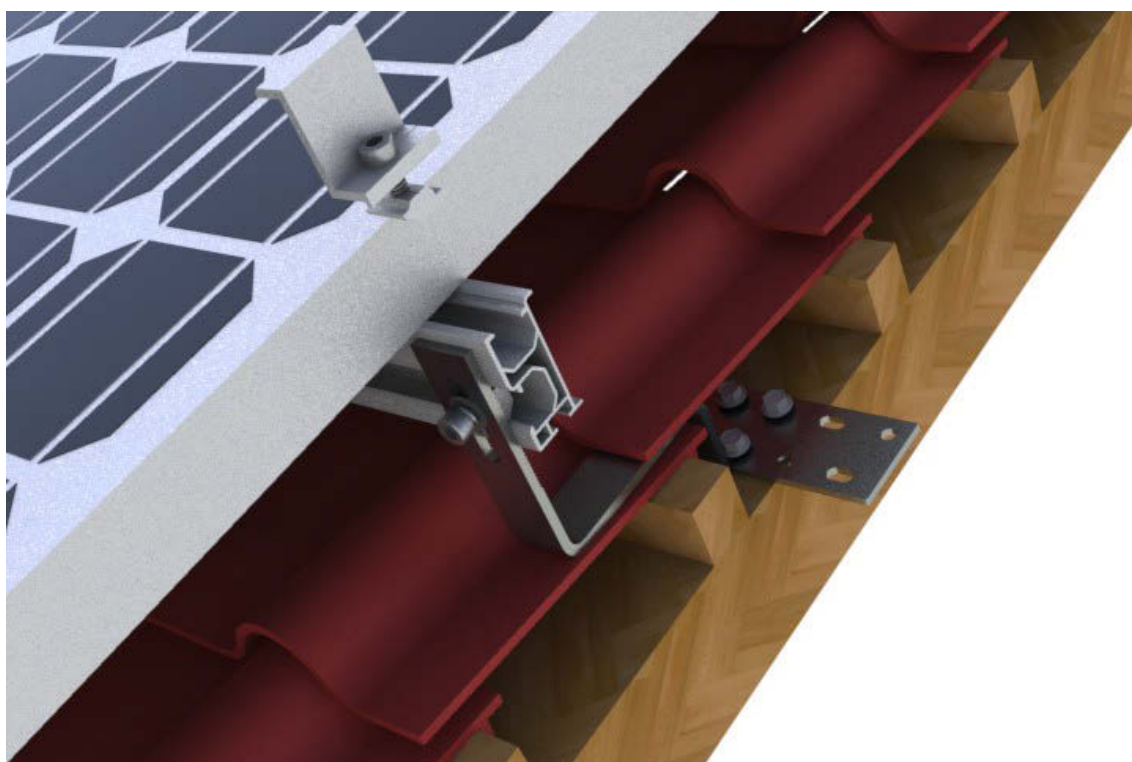
3. Repeat the tile roof hook installation in accordance with the planned layout.

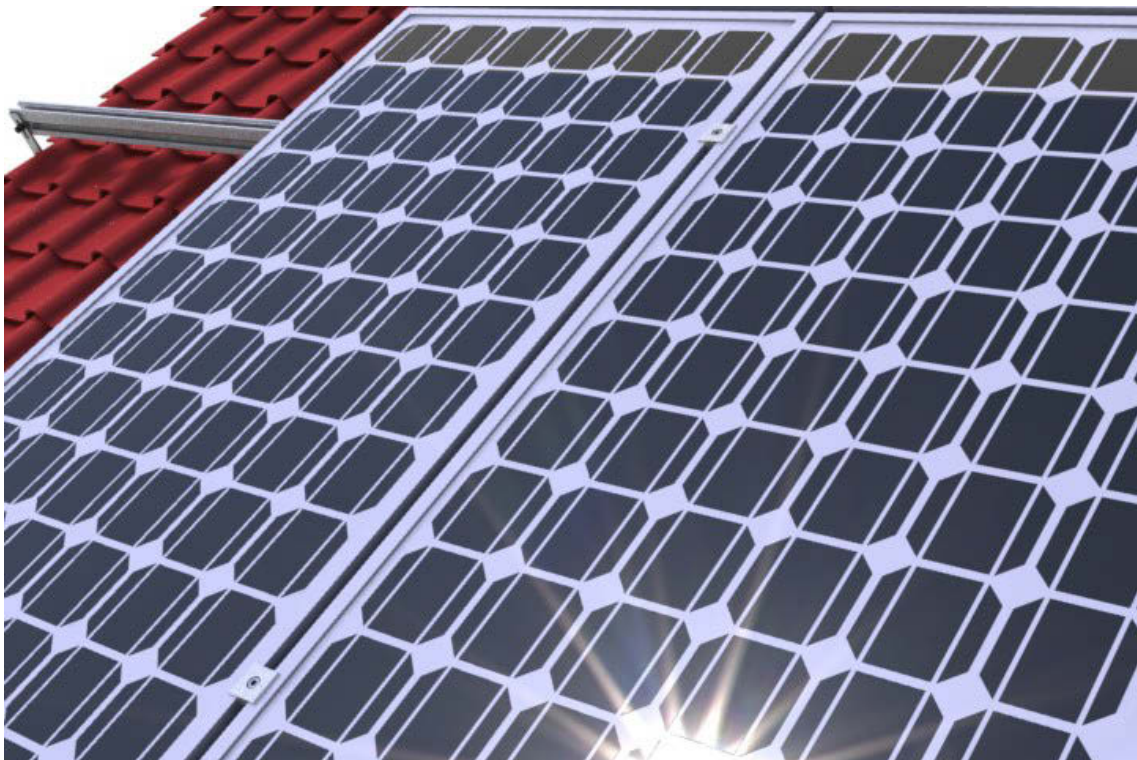
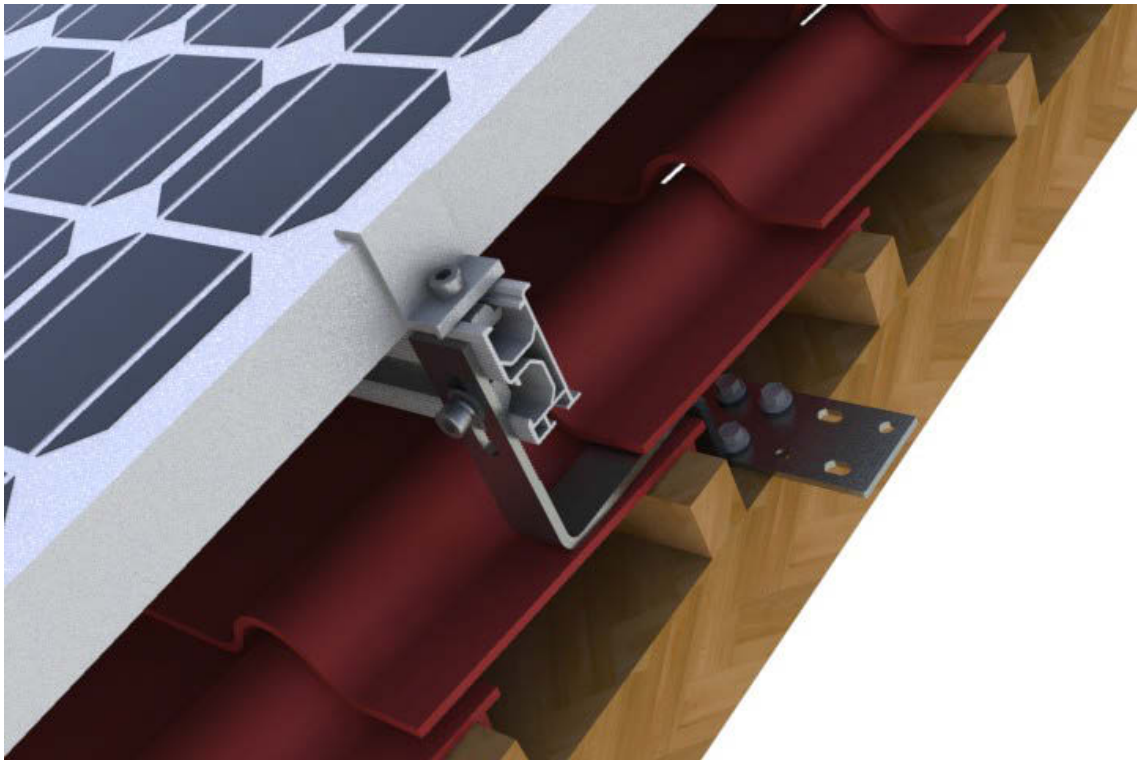


4. Place solar panels on the rails.

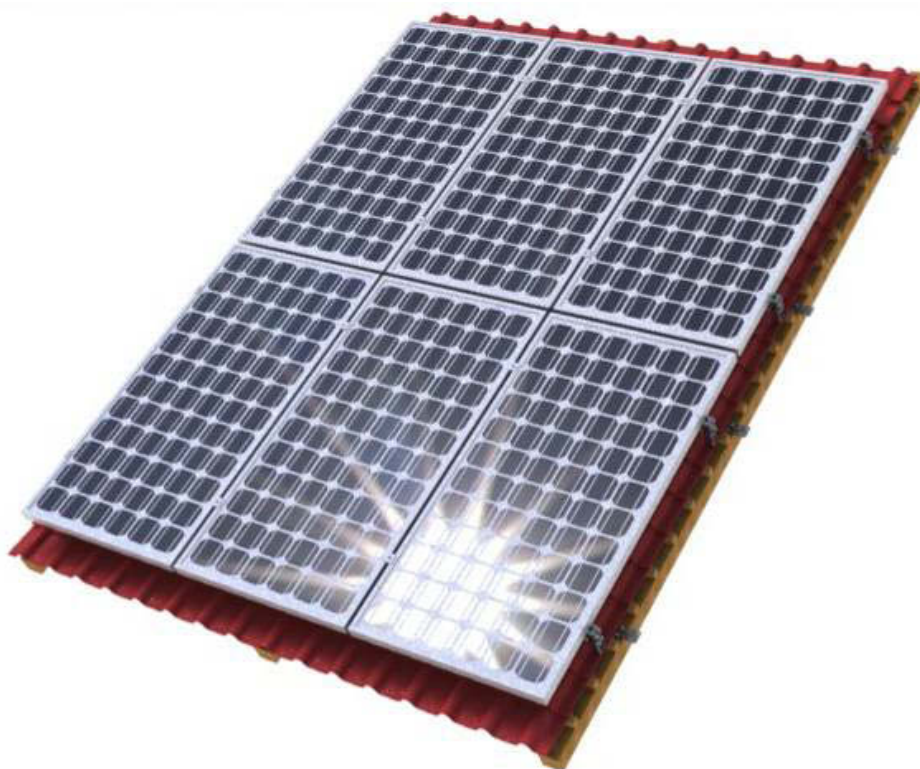
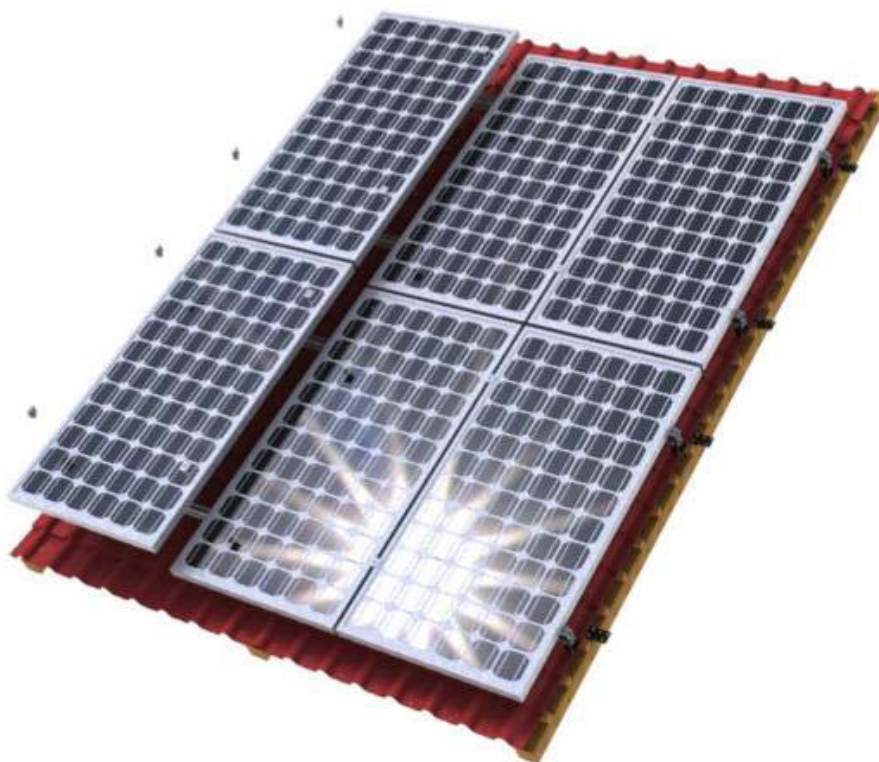


5. Using end clamps with M8*25 Hexagon screw and fixing nuts to attach solar panels to the rails. Adjacent solar panels are attached by using mid clamps with M8 Hexagon screws. (The hexagon screw length is determined by the solar panel's thickness)

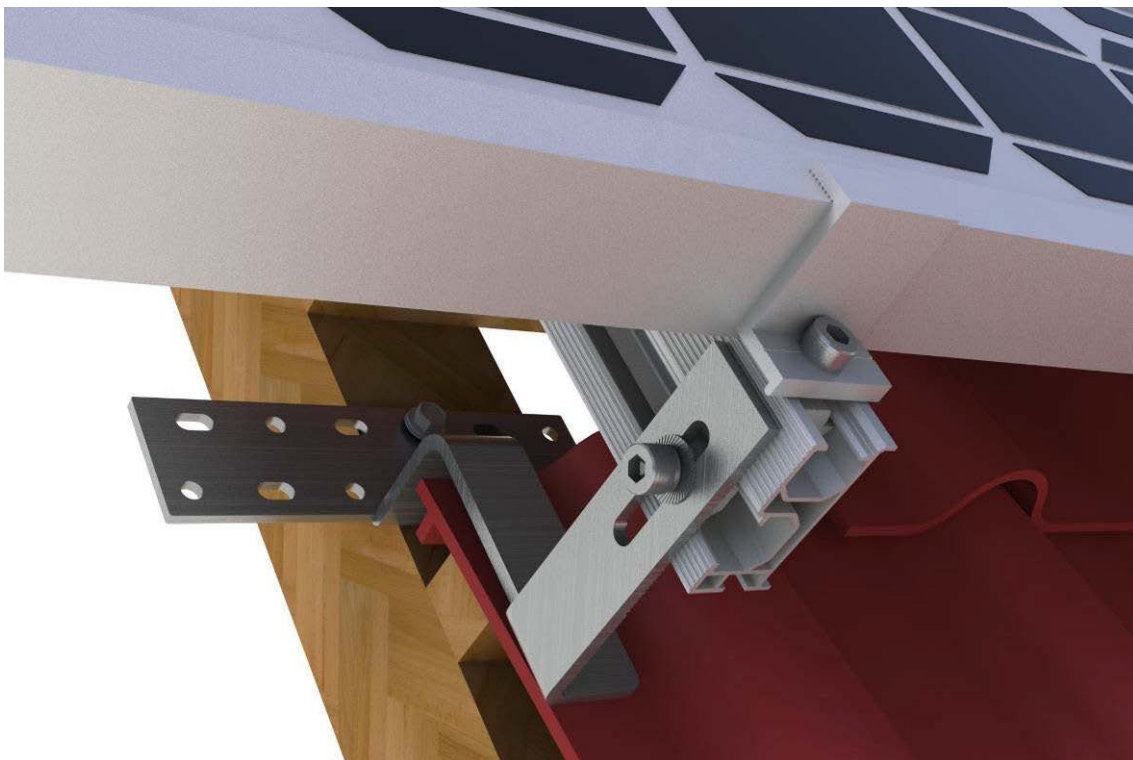
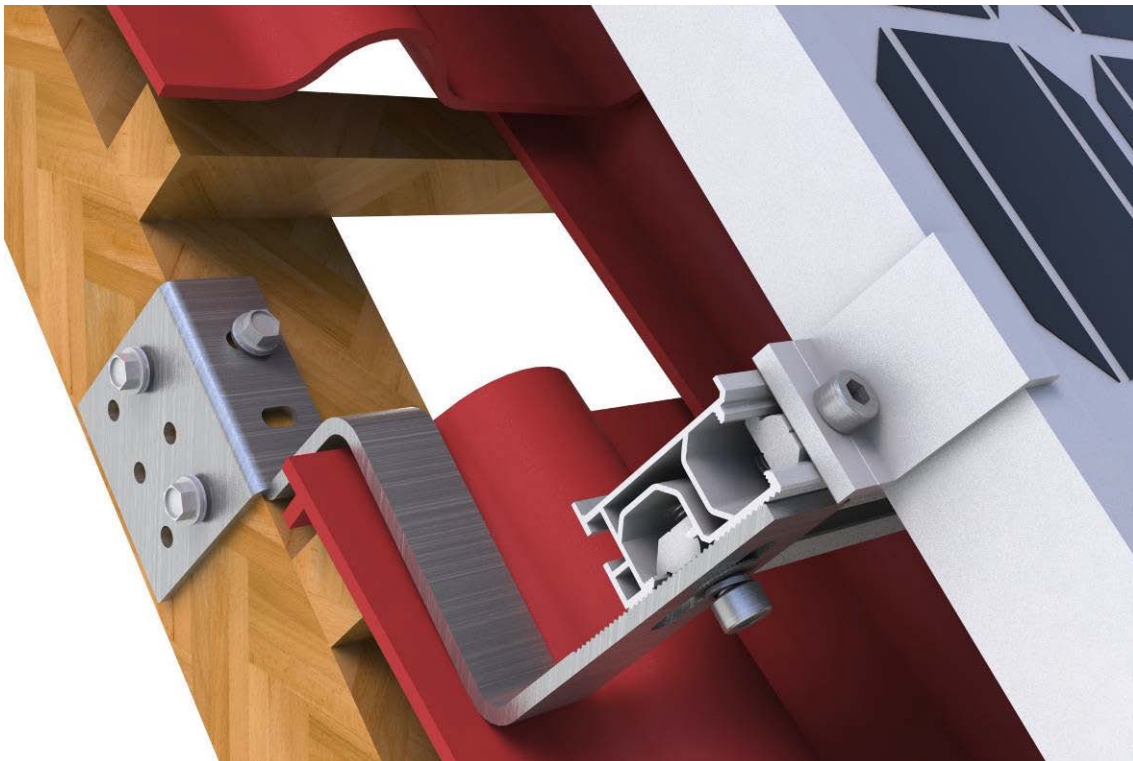


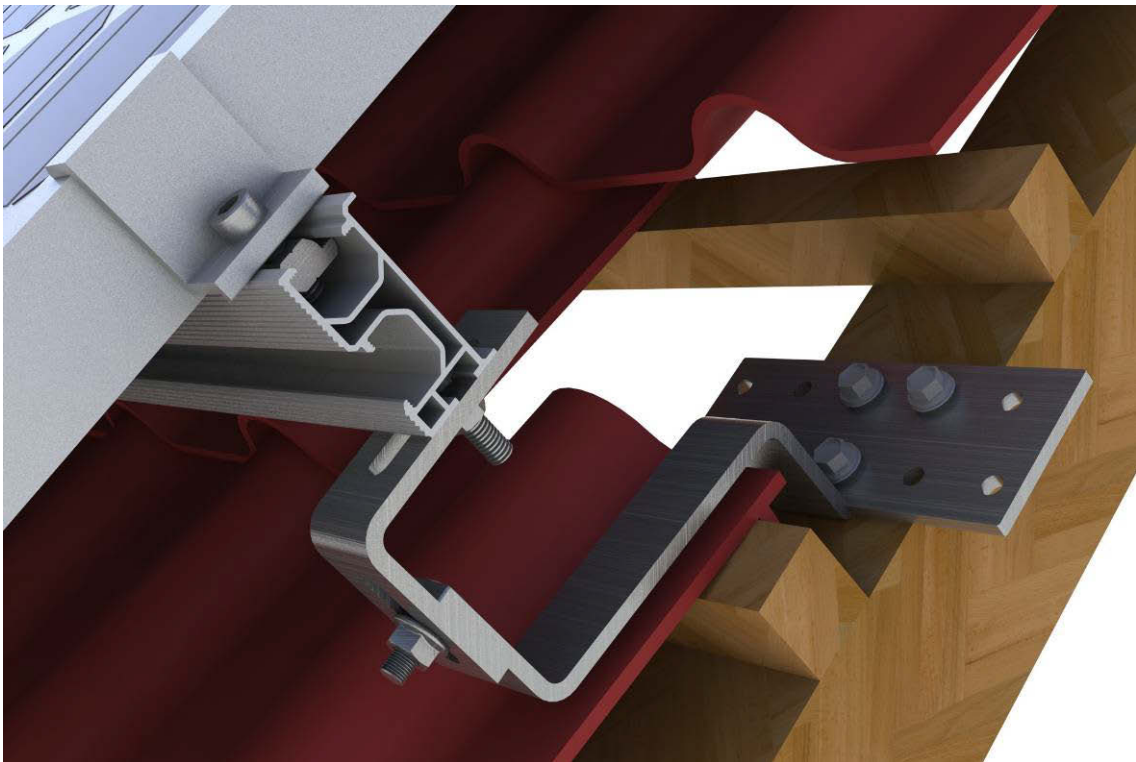
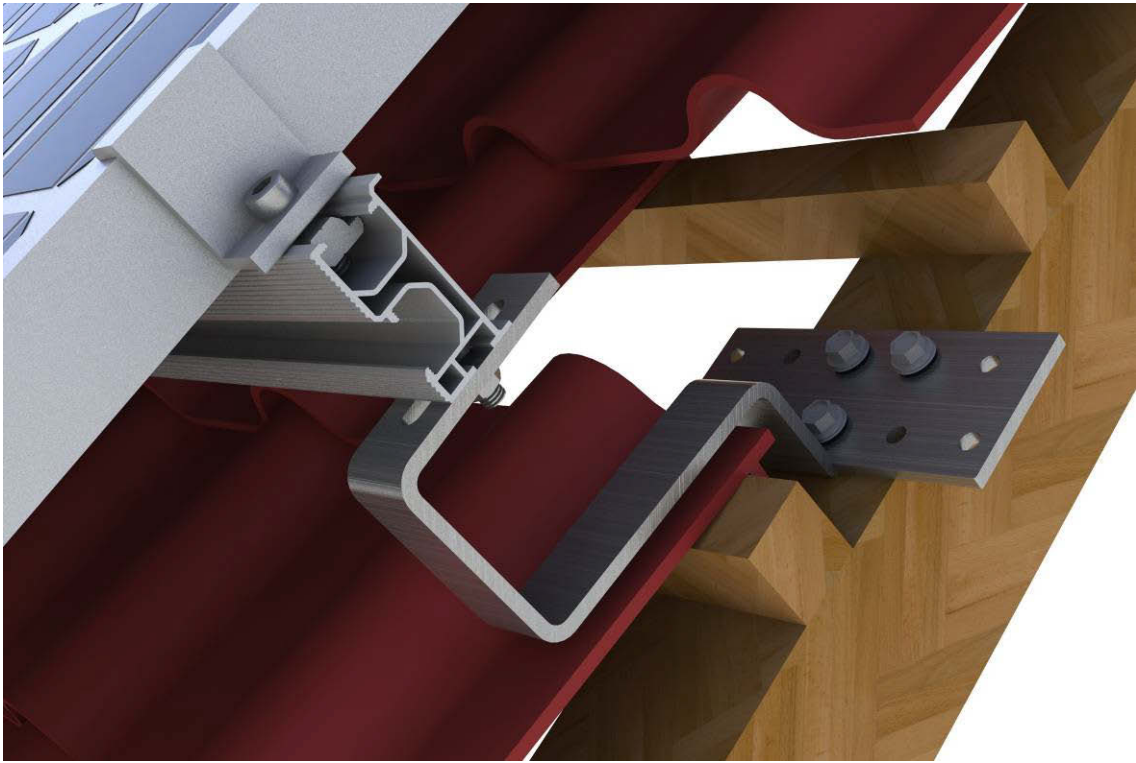


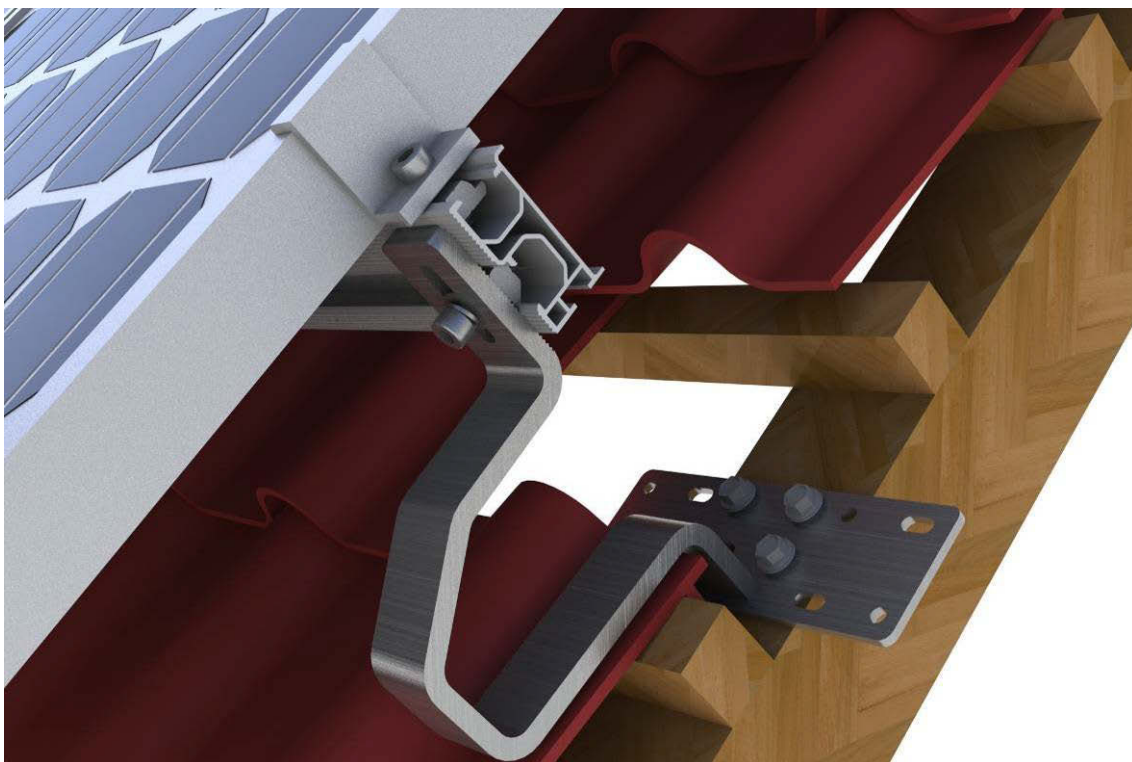
6. Repeat steps until installation is completed.



We offer various roof hooks to meet different installation requirements. The following are illustrations depicting a variety of different installations.







We also offer a range of solutions for fixing rails through metal sheet roofs. The following illustrations will assist in choosing the most appropriate solution.

