



PV Mounting System Roof Solution

- Tile-on Roof System
- Metal Sheet Roof System
- Flat Roof System
- Windstream System





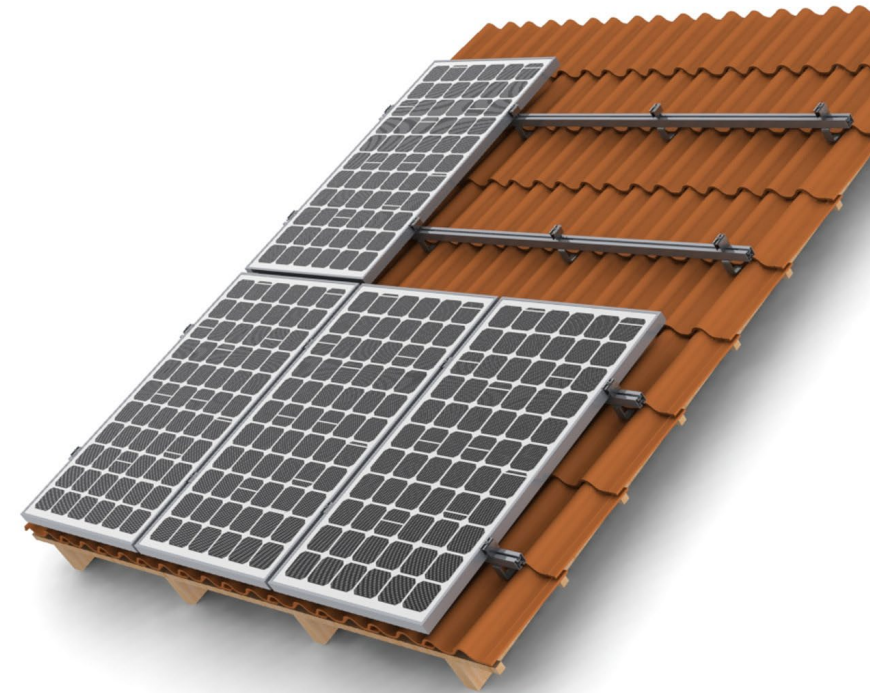
Metal sheet roof system, Israel 131MW

Selection Diversity & Customized Solution

Sunpal Power can provide wide range solutions for all kinds of roof and PV project which includes tiled roof, metal sheet roof, concrete flat roof etc, it is applicable to residential department, business tower and factory.

Sunpal Power has a professional technician team who works on water-proofing design, force calculation and computer simulation according to different installation situation data analysis, assuring the system safety and reliability. In addition, Our PV roof mounting system use super quality steel and aluminium for all components and parts and preinstallation and optimization design for products safety.

Sunpal Power has installed 60 MW solar roof projects all over the world.



Tile-on Roof System

Optimized design with wide range of usage, easy installation. The system uses roof hook to be fixed on the roof and mount the PV module by rail & clamps. The flexible design adopts to different roof structures and tile shapes.

Product Features

- Widely used for both crystalline and thin film modules.
- Easy & quick installation.
- Only 4~5 kinds of components and no more than 3 kinds of tools in whole system fixation.
- All system components are made with high quality aluminum & stainless steel.

Technical Data

Project site	Sloped roof tile
Tile type	Wave, trapezoidal, and various upright side whipstitch forms of caigang watts
Slope of roof	On request
Roof specification	Frame/frameless module, crystalline/thin film module
Installation type	Fixation on the roof
Module arrangement	Portrait/Landscape
Module area square	Client requirement
Module area position	Client requirement
Roof structure	Client requirement
Loading section	Al 6063 T5
Roof hook	Stainless steel
Small pieces	Stainless steel, Al6063 T5

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YEARS
GUARANTEE
for produced system







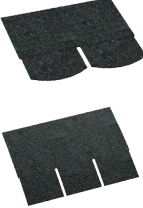


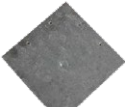








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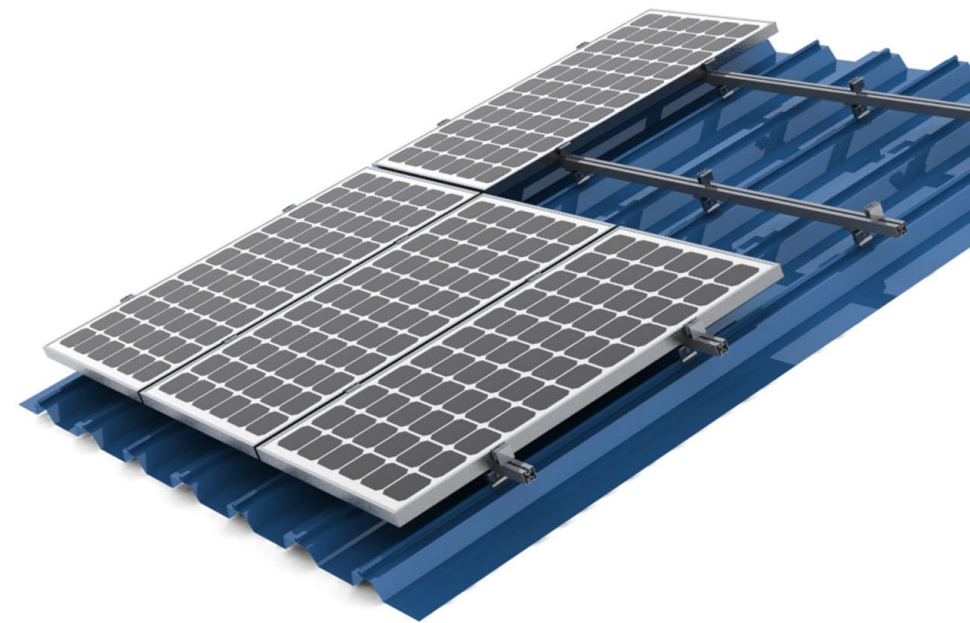


1 Fix roof hook on to the wooden beam with wood screw. Generally, three wood screws are enough.

2 Fix the aluminium rail to the roof hook with T-head bolt and fange nut.

3 Fasten the hex bolt when the module clamps and PV modules are located

Tile type	Part No. for roof hook	Tile type	Part No. for roof hook
 Hollow tile	 Roof hook C series VL01032 VL01115 VL01116 VL01112	 Scale tile	 Scale tile roof hook C1 VL01183
 Fla roof tile	 Roof hook CV series VZ00043	 Bitumen tile	 Asphalt tile roof hook C1 VL01184
 Standard tile		 Slate tile	 Slate tile roof hook VZ00066
 Double slot tile	 Roof hook SP1 VZ00064	 Spanish tile	 Spanish tile roof hook VZ00068
 Roman tile	 Roof hook Z2 VL01113		
 Plain tile			



Metal Sheet Roof System

Metal sheet roof is regarded as one of the hard cores for roof mounting system. Sunpal is able to solve the difficulty, by using matched clamp to fix the al-rail on the top of roof, minimizing the use of materials.

Product Features

- Less piece of components and easy for installation.
- Design speical clamp matching to the metal sheet shape and specification.
- Use super quality Al-alloy and stainless steel for components.
- Wide range of product line .

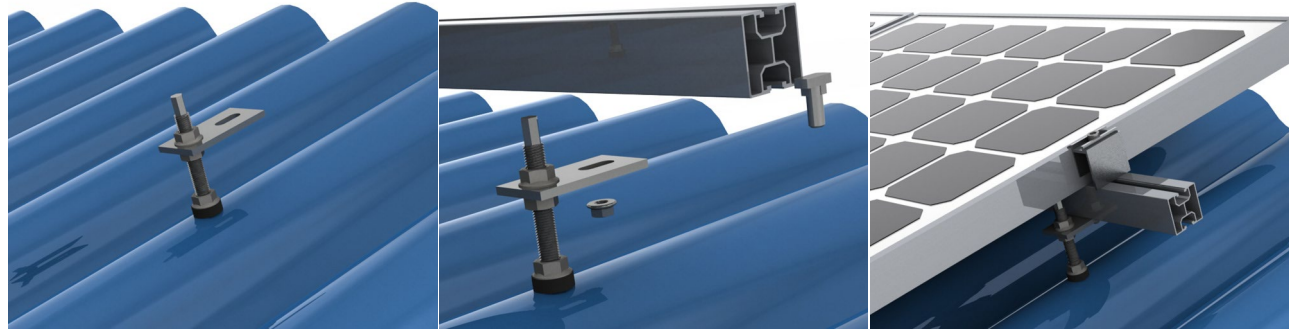
Technical Data

Installation site	Metal sheet roof
Slope of roof	Client requirement
Module specification	Frame / frameless module, crystalline/thin film module
Installation type	Parallel to the roof
Module arrangement	Portrait \ Landscape
Module area square	Client requirement
Module area position	Client requirement
Roof structure	Client requirement
Loading section	Al 6063 T5
Small pieces	Stainless steel, Al6063 T5

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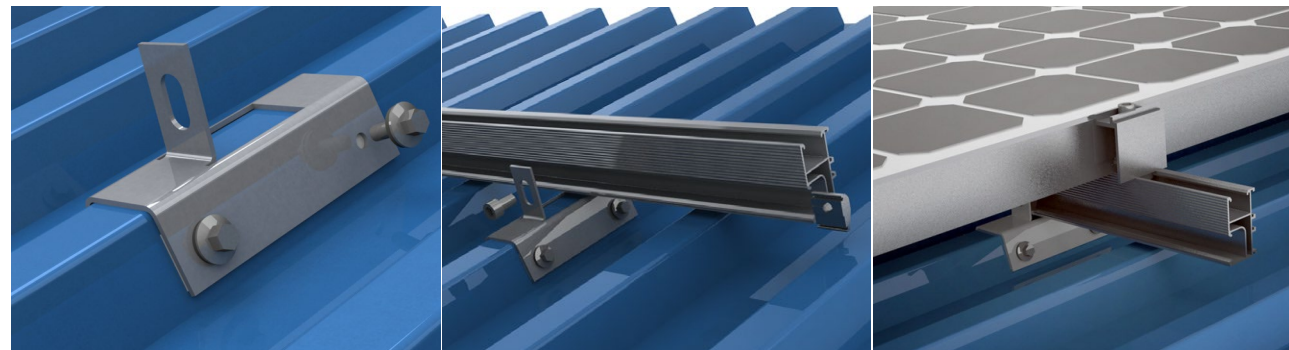
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Corrugated Roof System Installation Tips



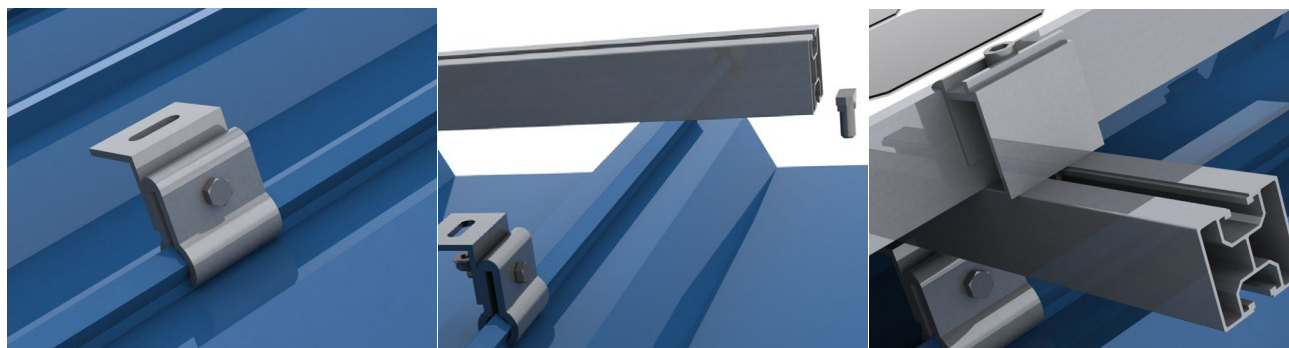
- 1 Drilling the located hole of the corrugated roof and the wood beam, then fasten the flange nut to fix the hanger bolt.
- 2 Insert the T-head bolt into the slot of the rail, and put the rail onto the hanger bolt, then fasten the flange nut to fix the rail.
- 3 Insert the end clamp and middle clamp into the slot of the rail. Then put the PV module onto the rail, and fasten the inner hex bolt to fix it.

Trapezoidal Roof System Installation Tips



- 1 Use four tapping screws to fix the trapezoidal bracket on the roof
- 2 Insert the eccentric nut into the slot of the rail, then fasten the inner hex bolt to fix the rail.
- 3 Insert the end clamp and middle clamp into the slot of the rail. Then put the PV module onto the rail, and fasten the inner hex bolt to fix it.

Standing Seam Roof System Installation Tips



- 1 Put the pre-assembled clamp on to the standing seam roof, then fasten the flange nut.
- 2 Insert the T-head bolt into the slot of the rail, and put the rail onto the clamp, then fasten the flange nut to fix the rail.
- 3 Insert the end clamp and middle clamp into the slot of the rail. Then put the PV module onto the rail, and fasten the inner hex bolt to fix it.

Steel Beam or Wooden Beam

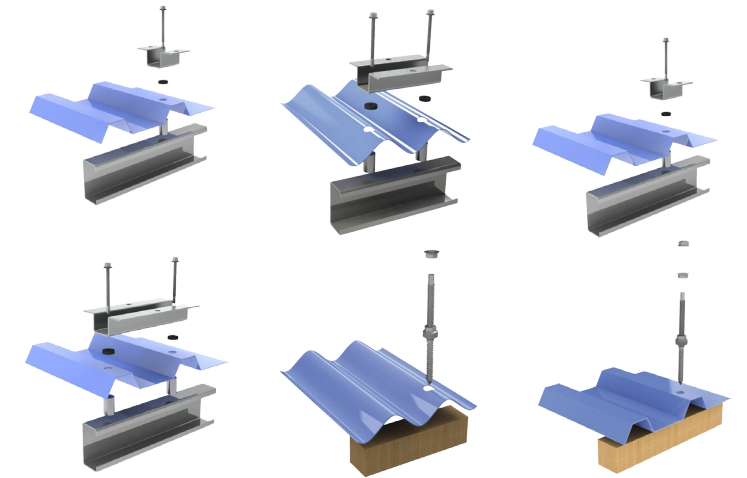
For steel beam-supporting bracket

Supporting bracket Z1 is mainly used for panels positioned parallel to roof or with a small angle. Z2 is a consequent further development of Z1, offering better fixation with two footings, more adaptable for tilted installation.

For wooden beam-hanger bolt

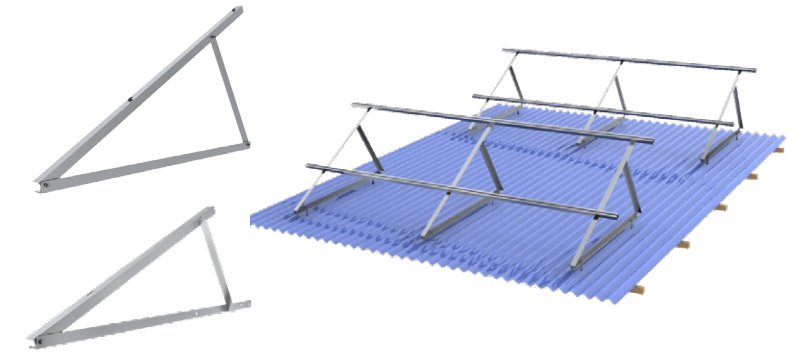
Hanger bolts are designed for roof with wooden substructure. It is used for installation parallel to roof or with a small angle.

Several double threaded screw options are available to suit various site conditions and customers' requirements.



Triangular supporting frames

With triangular supporting frames, it's possible that modules will be installed with a certain angle to optimize the power of sunshine. Versolsolar offers triangular supporting frames in aluminum or galvanized steel. For Customized Size and Installation Angle, Please email to service@sunpalpower.com



Various standing seam roof clamps

Versolsolar providing all those widely used clamps for different installation solutions. We have test installation of all clamps in our factory to ensure it'll save your time and labor cost. Clamps made by Aluminum alloy or stainless steel with highly stability and a perfect fixation on the roof.

Choose the suitable clamp for the corresponding roof as showed in the following table.

Standing Seam Clamp	Roof Type	Standing Seam Clamp	Roof Type

Flat Roof System

Sunpal's system are being widely used in all kinds of flat roof according to the roof bearing capacity and waterproof requirements. Usually we adopt load way or chemical anchor bolt to fix the system on the roof. Versolsolar chooses high quality material and good appearance, original design of connection between al-rail and module made the installation rapid. No second processing to the components are needed on site.

Product Features

- Adoptable to all kinds of crystalline modules and certain thin film modules.
- Direct foundation bolt , concrete base or bear load are the possible solution for ground installation.
- System installation inclination is adjustable according to requirement.
- Easy installation, only three kinds of tools could finish the installation.

Technical Data

Installation site	Flat roof
Module specification	Frame / frameless module, silicon / film module
Installation inclination	Client requirement
Module arrangement	Portrait
Module area square	Client arrangement
Module area position	Client arrangement
Base frame	AL 6063T5 / stainless steel
Small pieces	Stainless steel, AL6063 T5

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① Fix the triangular supporting frames on the concrete base.



② Fix the rail on the triangular supporting frames with T-head bolt and flange nut.



③ Locate the module clamps and put the PV modules on the rail. Then just need to fasten the bolt in the clamp.

Windstream System

There are two kinds of fixation in traditional flat roof mount installation, one is bottom connection and the other is increasing load. But the 1st way will break the roof surface, and the 2nd way has a requirement of roof load. Sunpal develops the Windstream system with independent hydrodynamics. The bottom of the system uses broaden Al-rail and stainless steel coaming no additional loading and roof breakage. Windstream has passed the Wind Tunnel Experiment in Technical University of Munich.

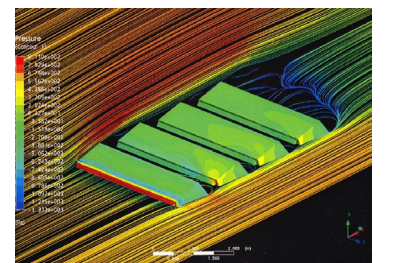
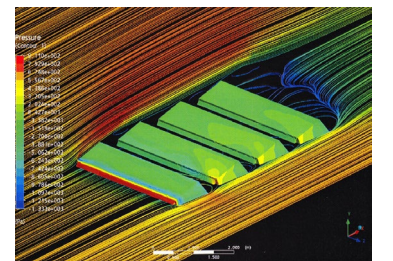
2MW Windstream System, Beijing

Product Features

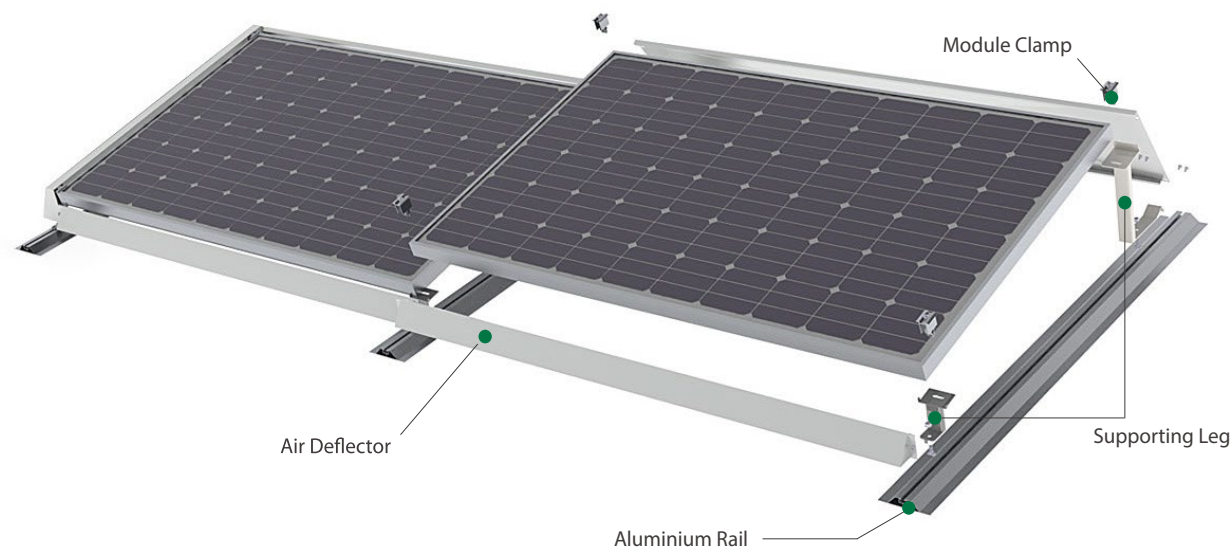
- This system is suitable for low load flat roof or space restricted roof.
- Module installation inclination is 10°-15°.
- We use stainless steel or SuperDyma in manufacturing for providing an excellent Anticorrosion feature.
- Also don't worry about roof leaking because there is no breakage in original roof structure.

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Wind Tunnel Test



Aluminium profile LC series

The special design of LC rail system ensures an accurate fixation of anchor points of front & back support with rail slot. 80mm & 140mm wide bottom design relies the pressure to roof surface.

Air deflector

Deflector use high-quality stainless steel or SyperDyma plated ensures a long term stable service. Meanwhile the system could against the damage of strong breeze depend on an excellent Aerodynamic Principles.

Supporting leg

All Supporting legs are made of high-quality stainless steel for avoiding corrosion of metals.

Connecting strip for base rails

Normally the maximum length of an Aluminium rail is 6ms, the strip will be used for rail connection.

Technical Data

Project site	Flat roof
Module specification	All modules with frame
Installation inclination	10° -15°
Module arrangement	Portrait
Module area square	Client arrangement
Module area position	Client arrangement
Bottom frame	AL 6063T5
Supporting leg	Stainless steel
Deflector	Zinc plated Al-Ma board or stainless steel
Small piece	Stainless steel, Al 6063T5
Bottom pieces	No mechanical connection, system fixation depend on self-weight and air flow pressure.





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