ELIOS | Carport M9

Elios Carport M9

3P*3 Carport Mounting Structure for 1 Car

Installation Manual

Installation Manual

Carport M9

Table of Contents

1 Product Introduction

The ELIOS Aluminum BIPV Carport Mounting Structure is a waterproof solar carport mounting system which is applicable for commercial and residential solar PV projects. The system has been developed for the use of various photovoltaic module.

Before installing the Carport Mounting Structure, please read this entire manual carefully. This manual provides planning and installation instructions for the Carport Mounting Structure.

Strict adherence to the Carport Mounting Structure Installation Guide will ensure the product meets structural requirements and complies with relevant standards and regulations. During installation, all applicable safety regulations must be observed, and local regulations in your region should be followed. Please contact ELIOS or your local distributor to verify that you are using the latest version of this installation manual.

The installer is solely responsible for:

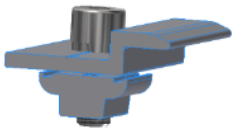
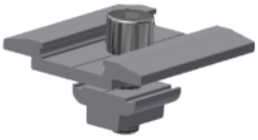
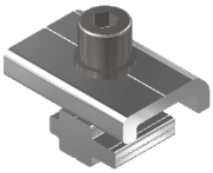
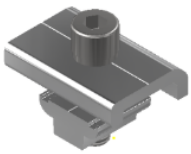
- Complying with all applicable local or national building codes, including any that may supersede this manual;
- Ensuring that ELIOS and other products are appropriate for the installation and the installation environment;
- Using only ELIOS parts and installers-supplied parted as specified by ELIOS (Substitution of parts may void the warranty);
- How to recycle: according to the local relative statute;
- How to disassemble: countermove with installation;
- Ensure that there are no less than two professional workers in panel installation;
- Ensure the installation of relative electrical equipment is performance by professional electrician;
- Ensure safe installation of all electrical aspects of the PV array.

2 Installation Tools and Product Details

2.1 Installation Tools

			
L-shaped hex key	Adjustable wrench	Socket wrench set	Power tools
			
Nylon thread	Tape measure	Carpenter's square	Laser level

2.2 Components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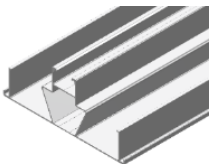
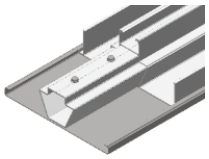
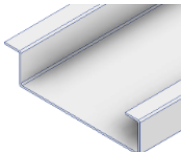
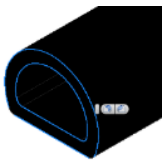
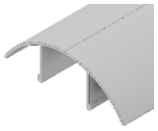
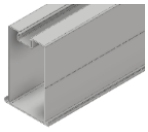
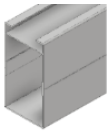
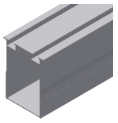
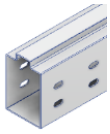
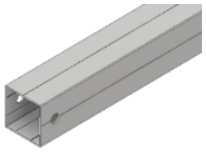
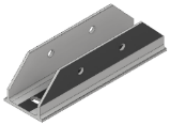
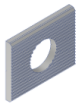
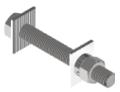
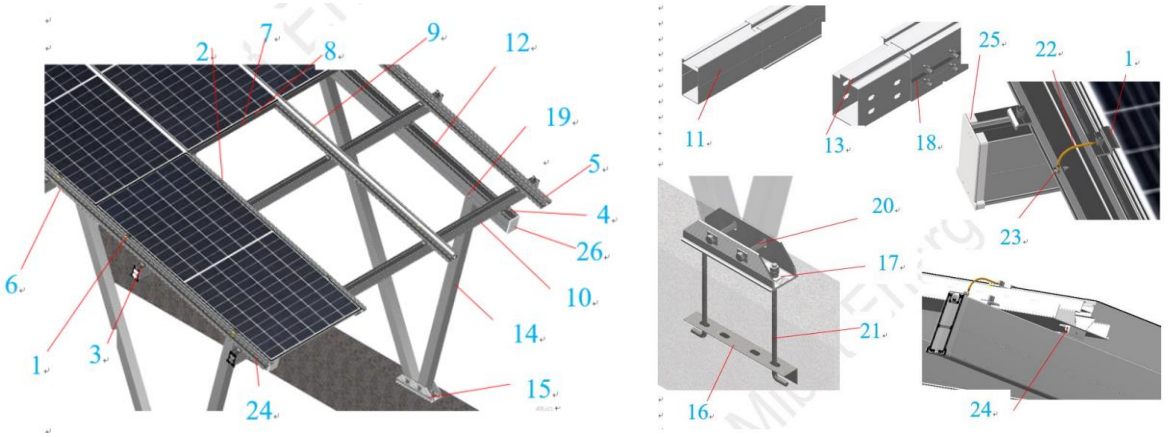
			
BIPV Mounting Rail	Splice for BIPV Waterproof Rail	Transverse Flume	D-shaped Waterproof Tape
			
Cover Plate for Inter Clamp	Wide Rail 130	Splice of Wide Rail 130	Beam 160
			
Splice of Beam 160	100*100 Square Tube	Carport Anchor Plate Kit	Angle Steel

			
Corrugated Washer L50	Hexagon Bolt Kit M12*140	Hexagon Bolt Kit M20*140	Hexagon Bolt Kit M20*160
			
Embedded Anchor Kit M20*500	Earth Wire	Self-tapping Screw ST6.3*19	Frame Grounding Lug Kit
			
Cap for Wide Rail 130	Cap for Beam 160		

2.3 Solution Overview



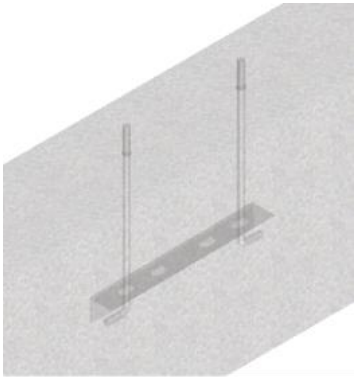
1. End Clamp 30 Kit
2. Inter Clamp 30 Kit
3. C Clamp Kit A
4. C Clamp Kit B
5. BIPV Mounting Rail
6. Splice for BIPV Waterproof Rail
7. Transverse Flume
8. D-shaped Waterproof Tape
9. BIPV Cover Plate for Inter Clamp
10. Wide Rail 130
11. Splice of Wide Rail 130
12. Beam 160
13. Splice of Beam 160
14. 100100 Square Tube
15. Carport Anchor Plate Kit
16. Angle Steel
17. Corrugated Washer L50
18. Hexagon Bolt Kit M12140
19. Hexagon Bolt Kit M20140
20. Hexagon Bolt Kit M20160
21. Embedded Anchor Kit M20*500
22. Earth Wire
23. Self-tapping Screw ST6.3*19
24. Frame Grounding Lug Kit
25. Cap for Wide Rail 130
26. Cap for Beam 160

3 Installation Guide

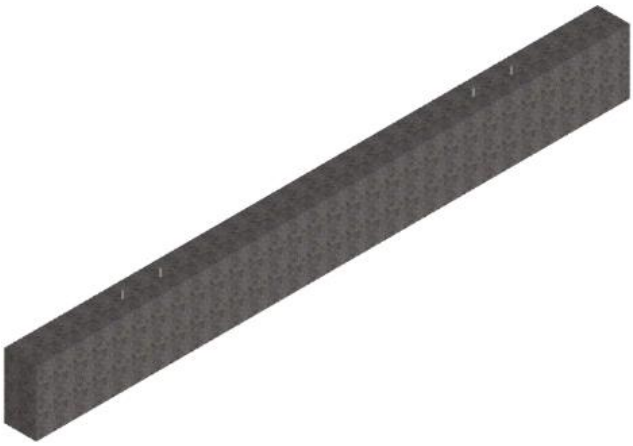
3.1 Installation Guide for Support

3.1.1 According to the dimensions planned on the drawings, concrete and embedded parts are fabricated. The dimensions of the concrete are subject to the design drawings.

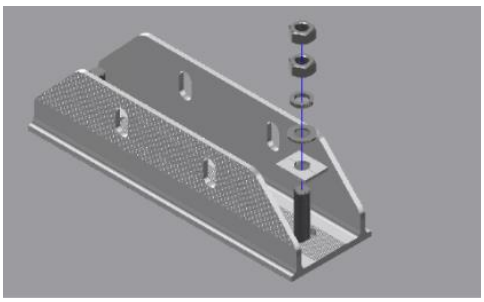
Embedded Parts



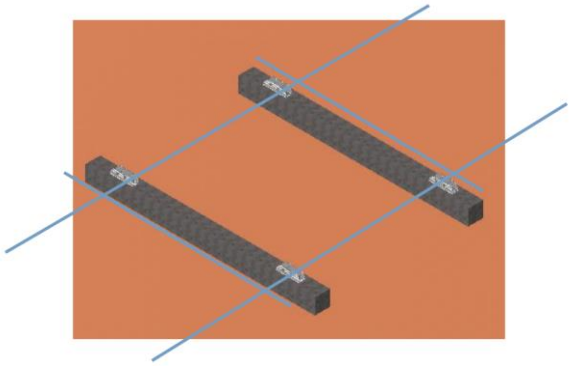
The embedded parts protrude 70 ~ 80mm above the surface.



Place the Carport Anchor Plate Kit in the Embedded Anchor Kit on the ground and pre-lock the nuts with Corrugated Washer L50.



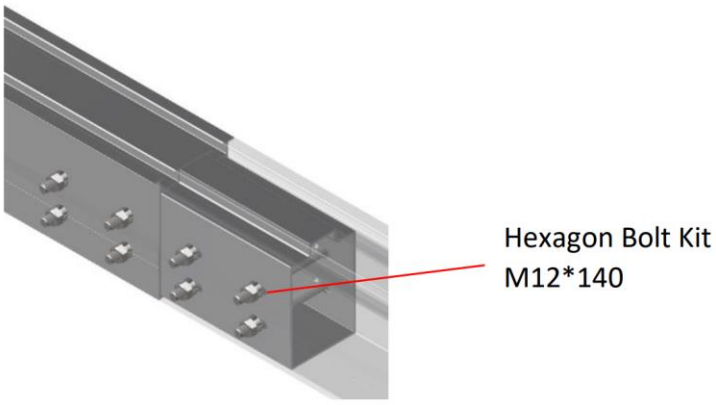
Use nylon ropes to position and adjust the Carport Anchor Plate Kit, ensuring that the Carport Anchor Plate Kit is in a straight line both longitudinally and laterally. After this step, the Carport Anchor Plate Kit can be locked. (Recommended locking torque: 70-80N· m).



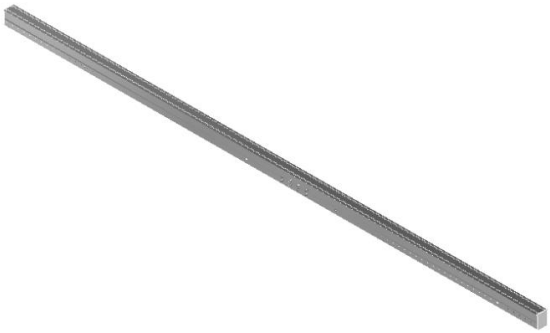
The Carport Anchor Plate is in a straight line both longitudinally and laterally.

3.1.2 Install the beam 160 and square tube.

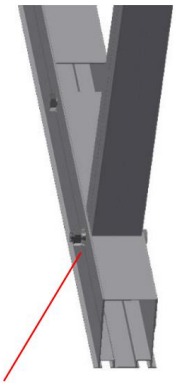
According to the design drawing, distinguish the specifications of the beams and connect them through the Splice of Beam 160 and the Hexagon Bolt Kit M12*140. (Recommended locking torque: 27-35N· m).



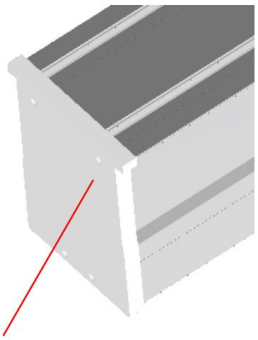
Turn the beam 160 over, and pre-lock the 100*100 square tubes on the beam 160 with M20*140 bolts. After the preinstallation of the square tubes, Cap for Beam 160 can be installed at both ends of the beam.



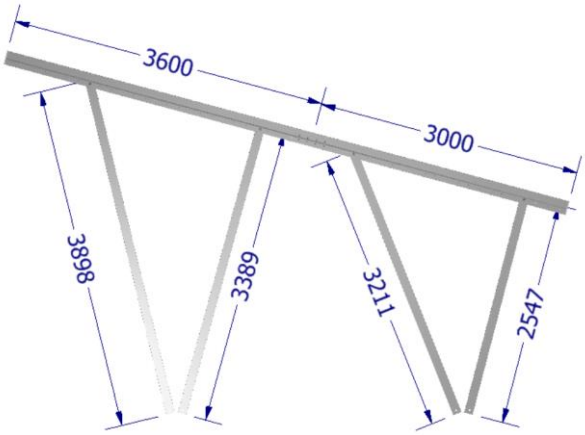
Note: The length of the beam varies, corresponding to the highest and lowest points above the ground. 3000mm corresponds to the lower point, and 3600mm to the higher point.



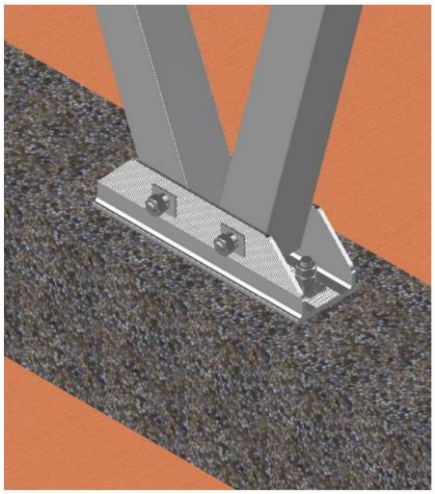
Hexagon Bolt Kit
M20*140



Cap for Beam
160

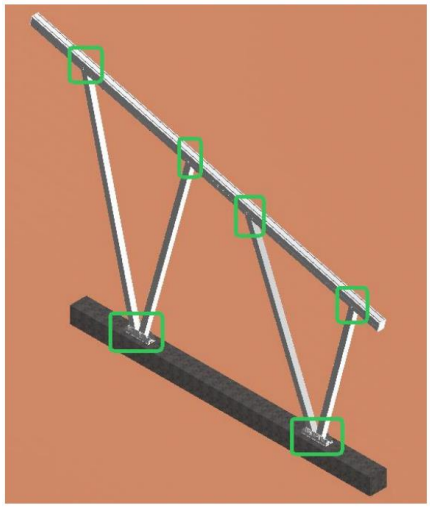


Lock the preassembled carport structure with the pre-installed Carport Anchor Plate Kit on the ground by using the Hexagon Bolt Kit M20*160. This assembly requires the cooperation of 3 to 4 people as shown in the figure. (Recommended locking torque: 55- 60N· m).



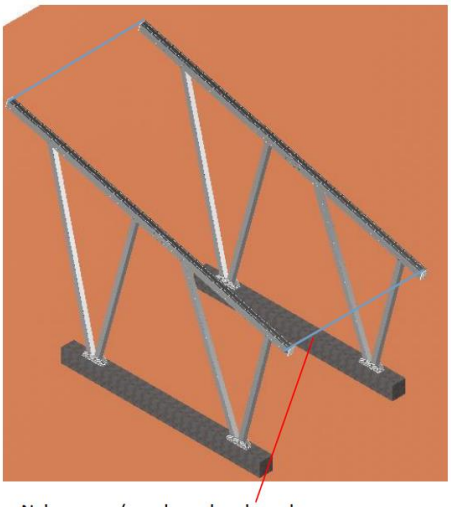
Note: The locking direction of the M20*160 bolts (with corrugated surface washers) for the Carport Anchor Plate Kit should be consistent with that of the M20*140 bolts for the 100*100 square tubes.

After this step is completed, the M20*140 bolts connecting the 100*100 square tubes to the beams can be tightened. (Recommended locking torque: 40-45N· m).



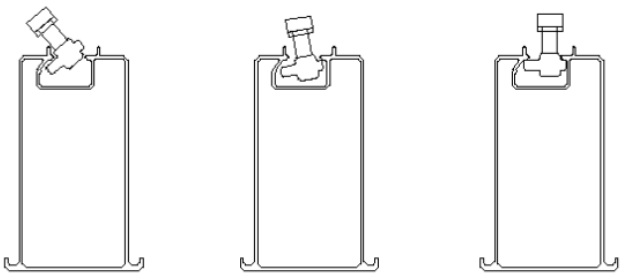
The locking directions of the bolts are consistent, and the bolt heads are in the same direction.

Repeat the above steps and install the carport support as shown in the figure according to the drawing requirements (the height of the beam in front and back must be consistent). Note: Check whether the nuts of the preinstalled support connection part are firm.

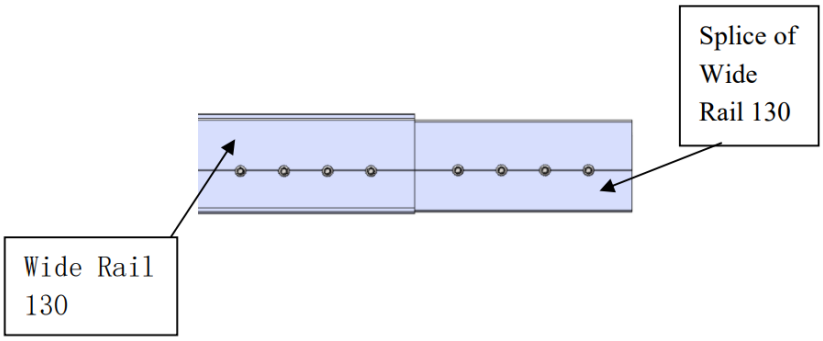


3.2 Installation Guide for Rail

3.2.1 The right picture shows the installation method of the nut. Both the C clamp kit and the inter/end clamp kit are installed in this way.

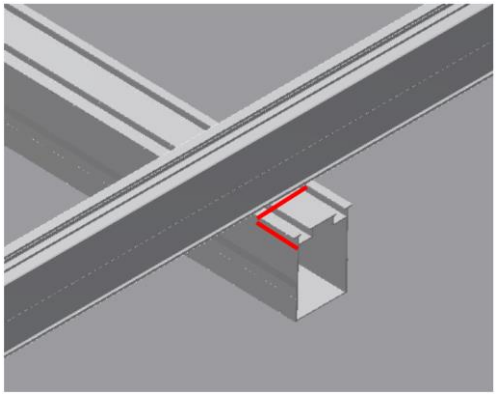


3.2.2 Before installing the wide rail 130 onto the preinstalled support, please first confirm the required length of the wide rail 130. If it is not long enough, please connect it with the Splice of Wide Rail 130. There are 8 self-tapping screws on one side, and a total of 16 self-tapping screws need to be driven.

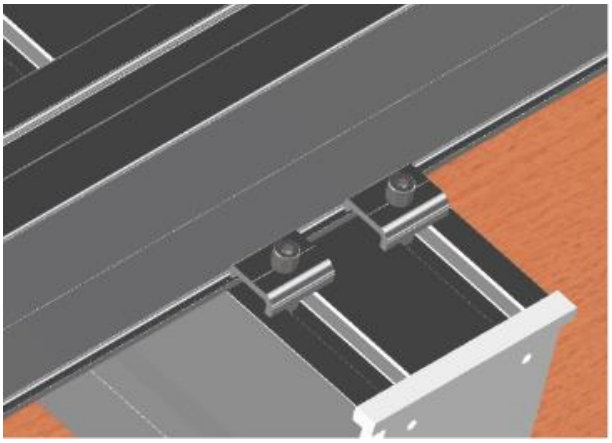


It is not recommended to perform rail connection on the pre-assembled support. After this step is completed, Cap for Wide Rail 130 can be installed at both ends of the rail.

3.2.3 According to the dimensions of the engineering drawing, mark the position from the upper end face of the rail to the edge of the beam with colored pens, and mark the position of the rail edge on the beam 160. The positions of the edges of the rails on the beams can also be marked to facilitate the placement of the rails.

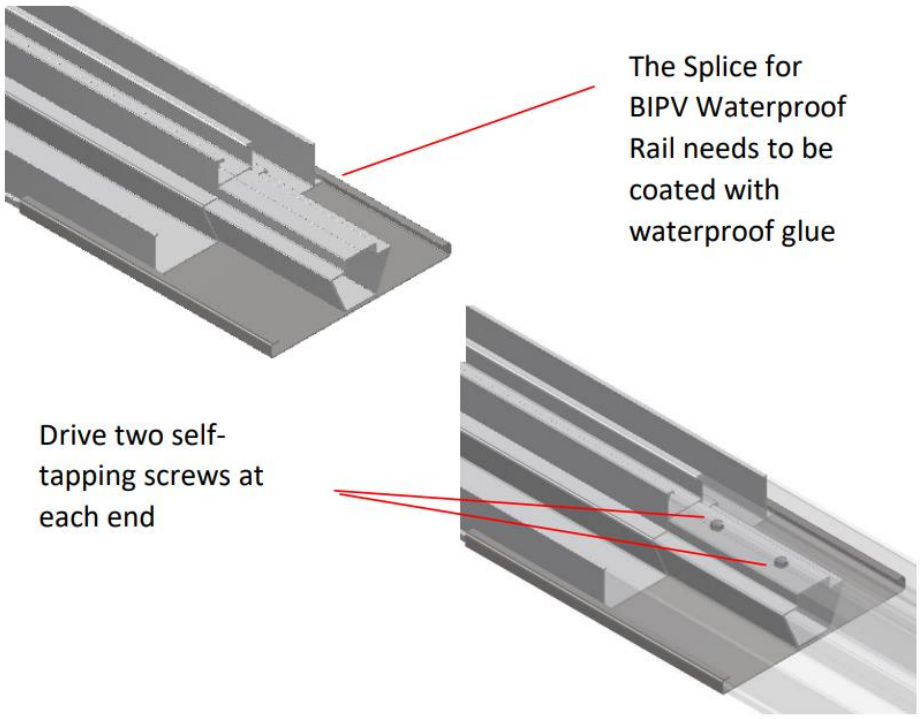


3.2.4 Place the rails at the positions planned according to the dimensions on the drawings. Fix the wide rail 130 on the support with the C Clamp Kit B and lock the M8 hexagon bolts with a hex socket wrench. Note: There are two sets of C Clamp Kit B on each side of the beam 160. (Recommended locking torque: 12 - 16N· m).

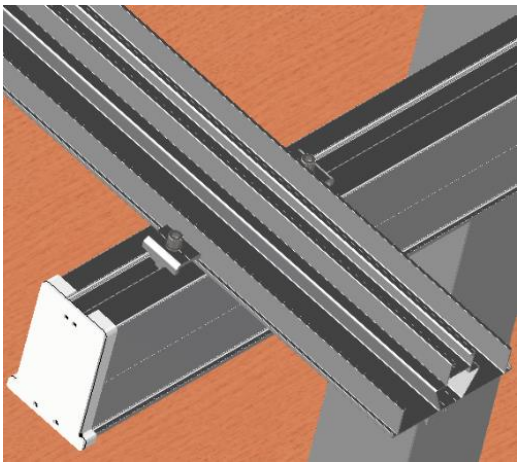


3.2.5 Repeat the above steps to install the remaining rails according to the planned dimensions on the drawing. Pay attention to keeping the ends of each rail aligned. Note: Check whether the nuts of the installed C Clamp Kit B are firm.

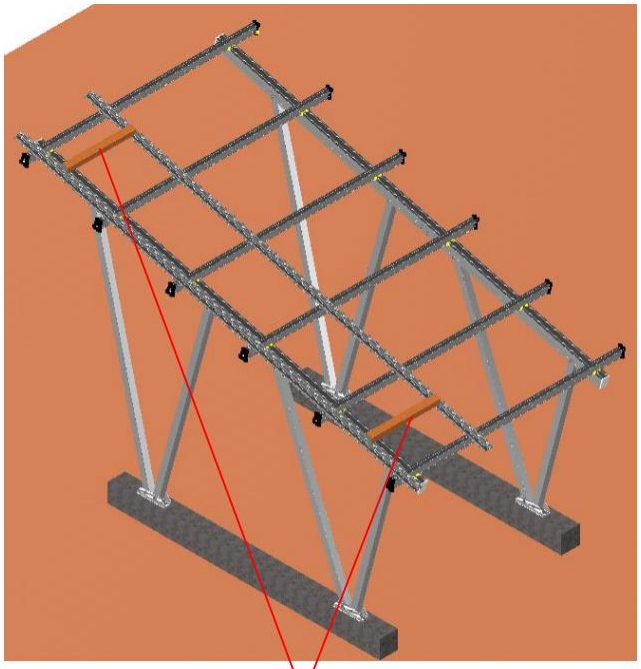
3.2.6 Before installing the BIPV Mounting Rail onto the support, first connect the BIPV Mounting Rail on the ground according to the design drawing through the “Splice for BIPV Waterproof Rail “and the self-tapping screws ST6.3*25.



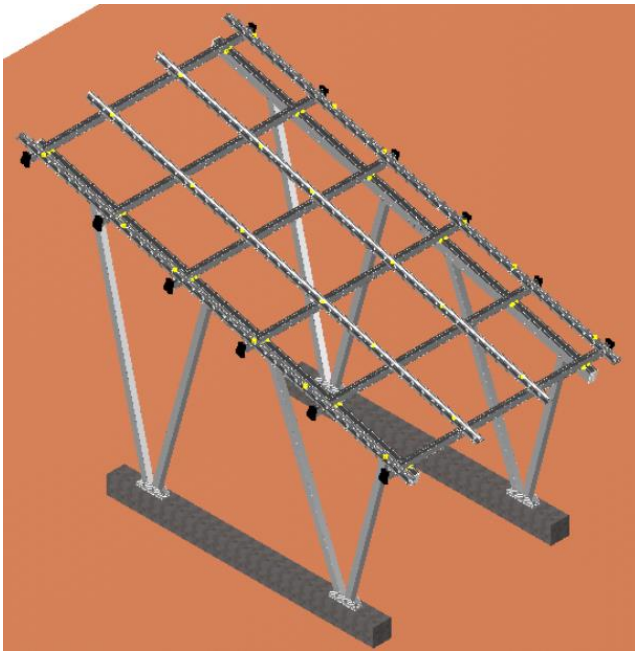
According to the dimensions of the engineering drawing, locate the position of the first longitudinal BIPV Mounting Rail, then set it up above the wide rail 130. Use a right-angle square to ensure the angles of the beam and rail. Fix the intersection points with C clamp kit A and use two sets at each intersection point. (Recommended locking torque: 12- 16N· m).



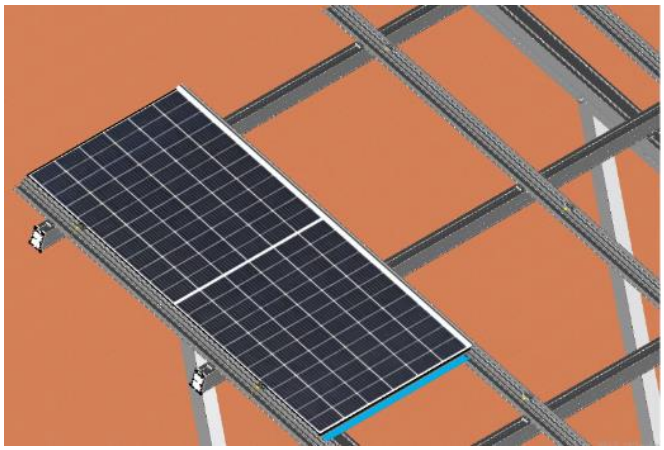
Cut two wooden sticks of the same length as the width of the solar panel (for auxiliary positioning) and place them on the second longitudinal BIPV Mounting Rail.

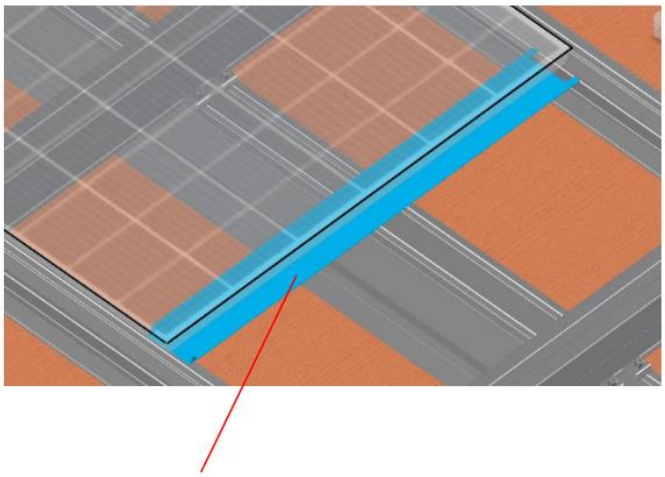


Put the C Clamp kit B in place without locking it at first. Then place a wooden stick at each end to ensure that both ends of the wooden sticks are closely attached to the side walls of the rail. Lock the C clamp kit and repeat the above steps to install the remaining BIPV Mounting Rail.

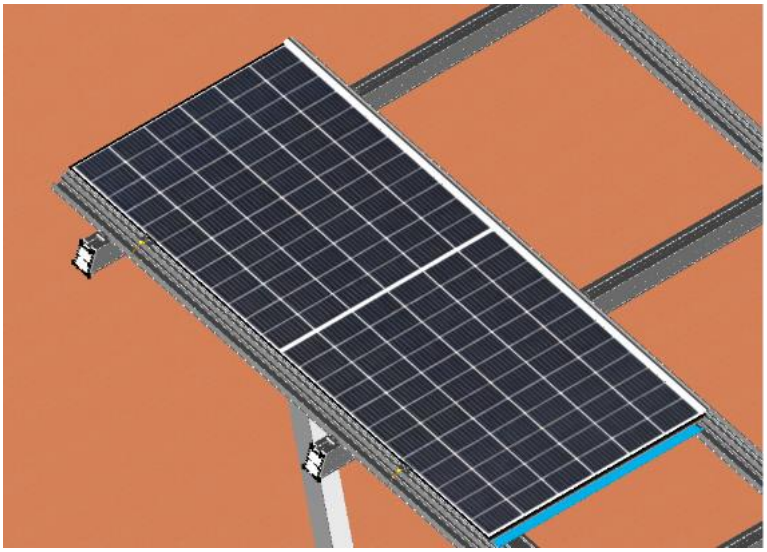


Start placing the solar panels and the Transverse Flume simultaneously (it is recommended to start installation from a higher position).



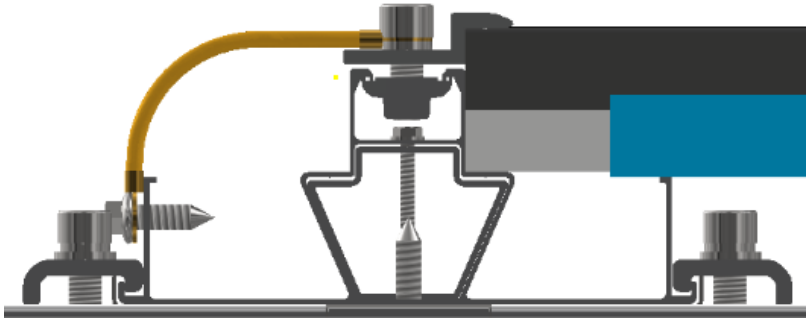


The Transverse Flume is under the solar panel (note that the “ear” should face the lower part).

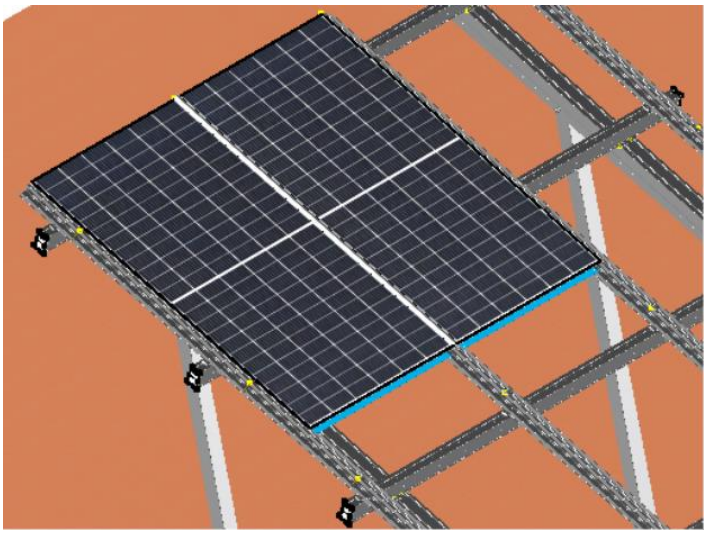


Fixing the end clamp kit. The Earth Wire is placed on the left of the end clamp kit (the other side does not need to be placed). (Recommended locking torque: 10 - 14N· m).

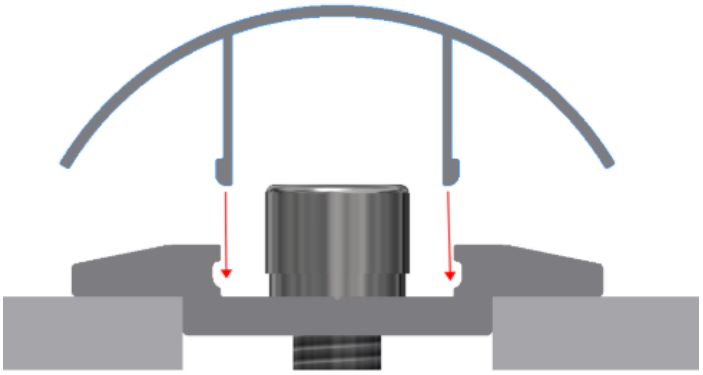
Note that the Earth Wire is placed on the spring washer.



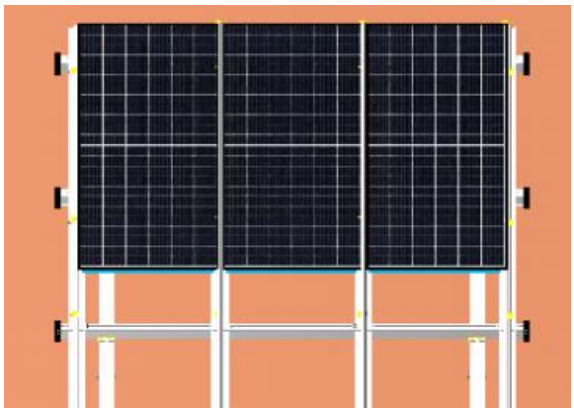
Place the second solar panel in the first row and the inter clamp kit (at this time, the inter clamp kit connected to the first solar panel is directly locked). After locking the inter clamp kit, place the Cover Plate for Inter Clamp. (Recommended locking torque: 10 - 14N· m).

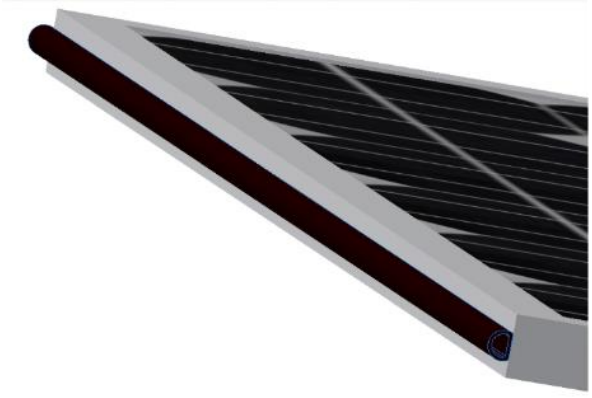


Repeat the above operations to complete the installation of the first column of solar panels.

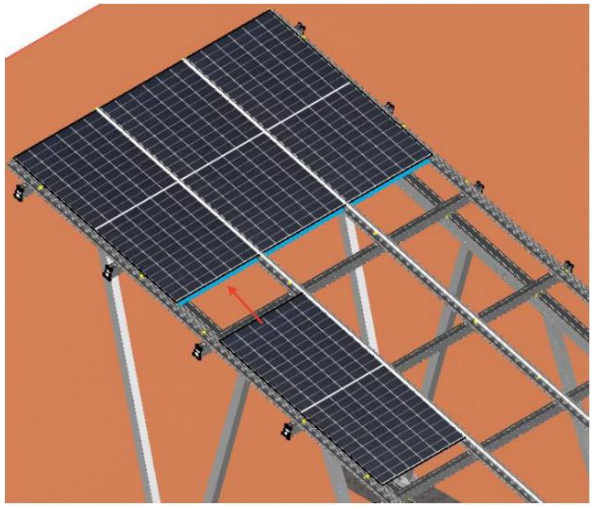


Before installing the second row of solar panels, install the D-shaped waterproof tape at the end first.

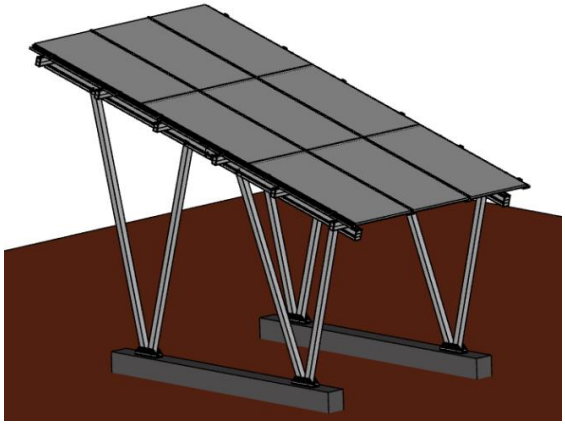


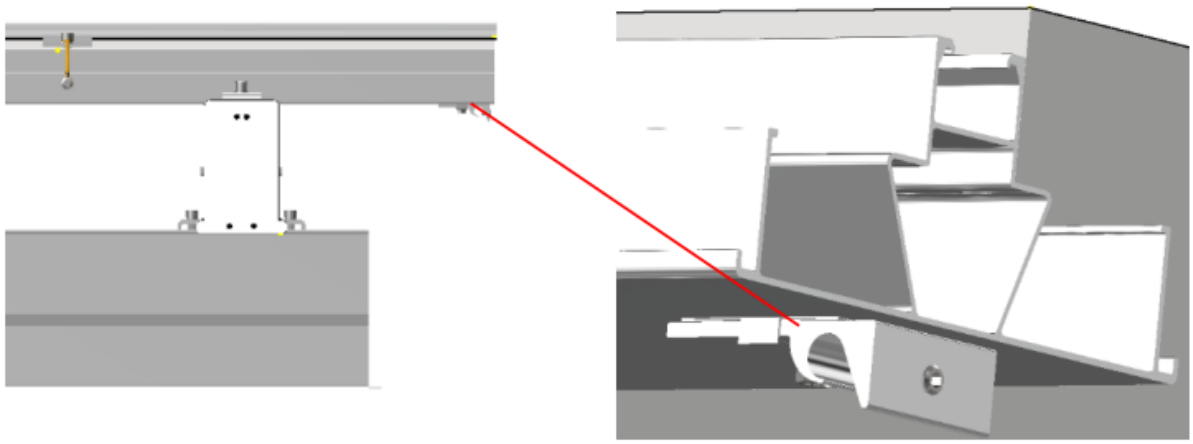


Slide the solar panels into the rail and push them upwards to keep the gap between the top and bottom of the panels ≤3mm. Then repeat the installation sequence of the first row of panels until the entire array is installed.



After installing the solar panels, it is necessary to check whether all the fasteners are tightened and install the Frame Grounding Lug Kit on the BIPV Mounting Rail with the Earth Wire.





4 Maintenance

To ensure the reliable operation of the photovoltaic bracket and improve the safety of the equipment, a daily registration inspection system should be established in the daily operation and maintenance work. Daily inspection should be no less than once a month. Through the inspection work, we strive to find the hidden trouble in time, prevent it from happening, and effectively improve the reliability of the operation of the photovoltaic bracket.

After severe conditions such as strong winds, tropical storms, heavy snow, and earthquakes above level 6, maintenance personnel should be organized to inspect the photovoltaic support in all aspects and make the corresponding inspection records. If the photovoltaic support is found to be damaged, the problem should be immediately reported.

Pay attention to check the surface for garbage or debris; Check whether the entire structure of the photovoltaic support system is corroded, or the parts are missing, falling off; It is necessary to pay attention to its sealing degree in places such as sealing, and repair it if necessary.

When the height of the support is more than 2.5m, the dress of the climber shall meet the climbing requirements. Equipped with safety belt, can work; All on-site maintenance personnel should wear safety helmets and other protective equipment; When the wind is above 4, rain and snow weather and there is no nighttime construction lighting facilities, maintenance and overhaul work is prohibited; Maintenance personnel are strictly prohibited from smoking and drinking alcohol during operation.