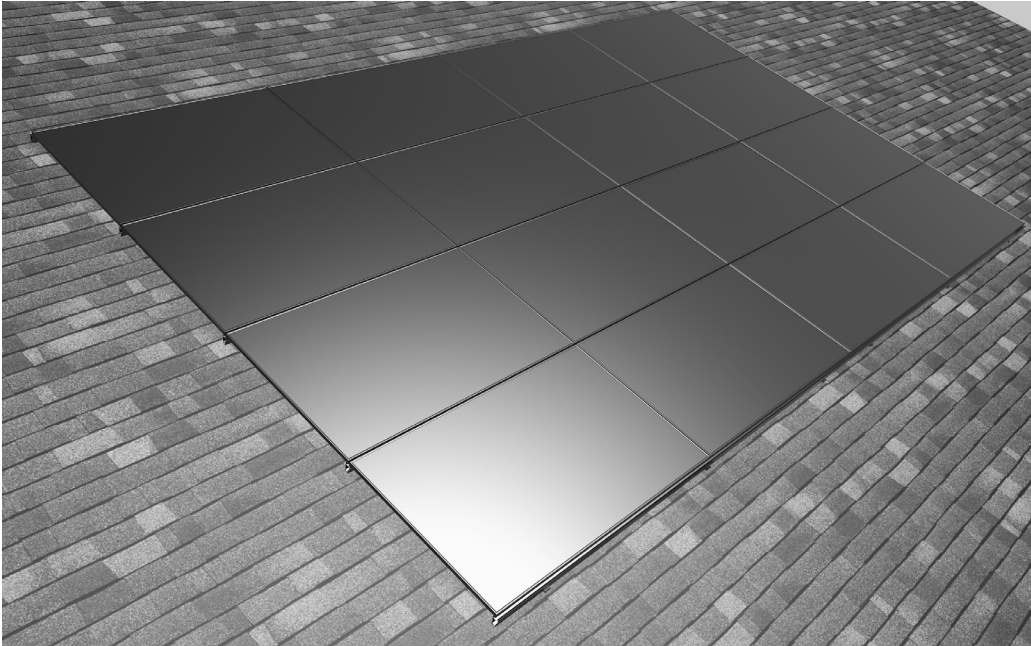


4L4

Residential Roof
MagicSolar System®



Installation Manual



Disclaimer

This manual only describes the applicable standards and appropriate procedures for the installation of the MagicSolar System®. Installation must fully comply with all standards and requirements. Failure to follow the instructions in this manual may result in property damage, personal injury, or even death. This manual is only intended for use with the certified products of the MagicFrame® produced by our company. This product is patented and any imitation is strictly prohibited!

References

Structure Standards—Asce7-10

All components in this manual :

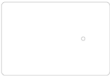
Modules—UL61703

Mounting Structures—UL62703

Integrated Grounding—UL467

All components in this manual (see limitations and UL standards)

Main Components List

No.	Materials	Specification	Unit	Quantity	Image
1	Rail	3360Al	piece	10	
2	T-bolt	TM8 × 35	set	30	
3	Self-Tapping Flange Screw	M8 × 40	set	60	
4	Module	1895 × 1039 × 30mm	piece	16	
5	Hanger Bolt	AL/SUS304 Slotted Hole (25-40mm)	set	30	
6	Bonding Clip	Stainless Steel	piece	64	
7	Bonding Connector	4 m ² /200mm	set	10	
8	End Cap	33/60	piece	10	
9	Roof Flashing		piece	30	

Items Required

No.	Item	Image	
1	Long & Short Tape Measure		
2	Socket Torque Wrench		
3	Impact Electric Wrench(M8-12) Socket		
4	Gloves		
5	Safety Shoes		
6	Safety Helmet		
7	Reflective Vest		
8	Electric Drill Bit (M10)		
9	Glue Gun and Waterproof Adhesive		
10	White String (Non-Elastic)		
11	Safety Harness (For High-Altitude Work)		
12	Chalk Line Box (White Ink)		

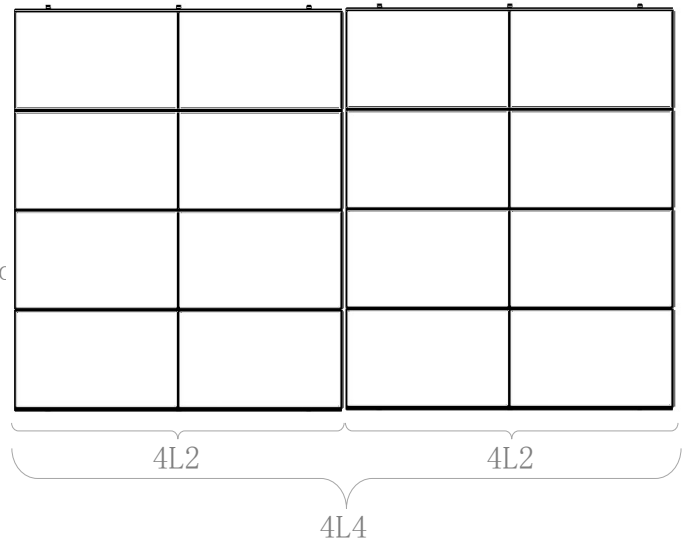
Residential Roof

Support Installation Process

1. Mounting Rail Installation

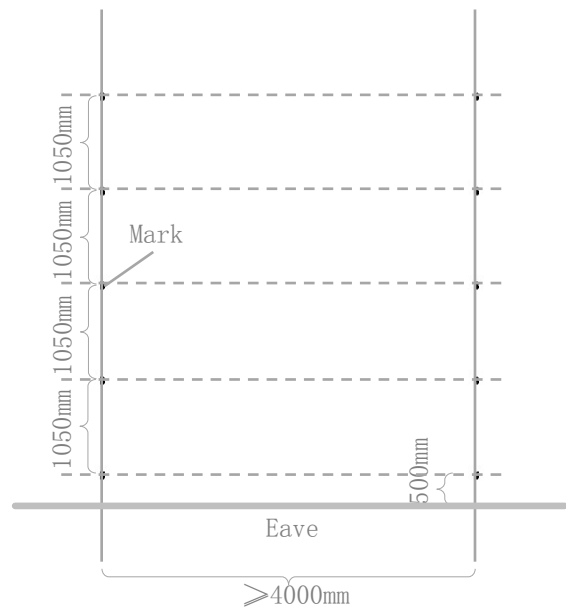
Step 1

The 4L4 residential rooftop array consists of two 4L2 arrays. During construction, it can be treated as two separate 4L2 arrays, and the installation instructions should be written according to the 4L2 array installation process.



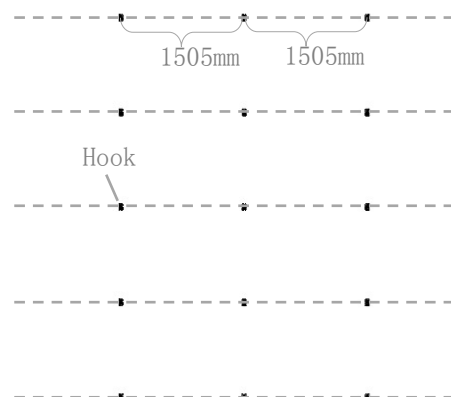
Step 2

Based on the roof structure and design drawings, determine the distance between the array and the eaves (assumed to be 500mm). Use white string (or other materials) to make two lines, each with 5 knots spaced 1050mm apart (spacing based on design drawings). Ensure the distance between the two lines is greater than the required array width, and mark the knots with white ink for alignment.



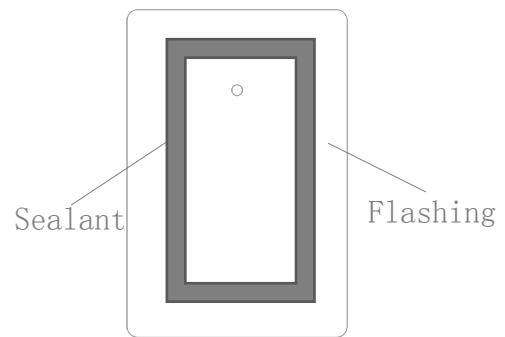
Step 3

Within the marked white lines, determine the hook positions with a parallel spacing of 1505mm (adjustable based on the tile roof and wooden beam spacing). Use an M8 electric drill bit to expand the holes.



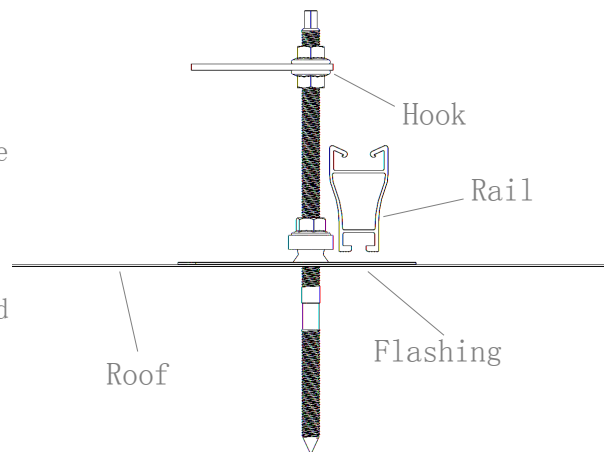
Step 4

Use a glue gun to pre-apply sealant around the edges of the waterproof aluminum plates. Align the holes in the aluminum plates with the expanded hook holes to facilitate the quick installation of double-ended studs.



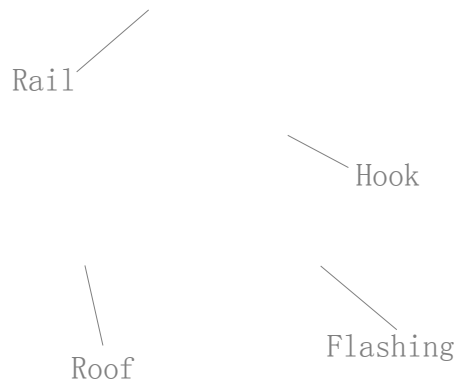
Step 5

When installing hooks, start with the row closest to the eaves (ensure the hooks are driven in at an angle as close to perpendicular to the roof as possible). Place the rail on top of the hooks to aid subsequent installation and serve as a stepping platform for other operations. Repeat the process for the remaining hooks and rails until installation is complete.



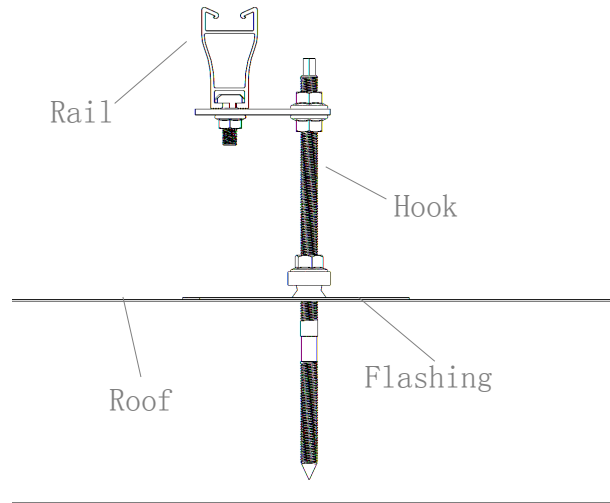
Step 6

Align the bottom of the rail with the iron plates of the hooks. Use the rail's straightness to adjust all hook plates in each row to remain on the same plane.



Step 7

Secure the T-bolts for the first rail.
The remaining rails will be locked and fixed during the subsequent component installation.



Module Installation Process

1. Solar Panel Installation

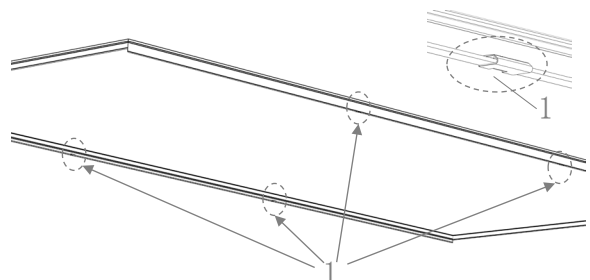
Step 1

Check the solar panels for any damage.



Step 2

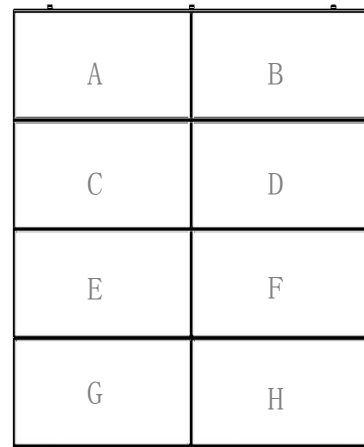
For each photovoltaic modules, install 4 specially designed conductive locking tabs (each positioned approximately 100 -200mm from the short edges of the outer modules).



Note: Install two bonding clips on each side

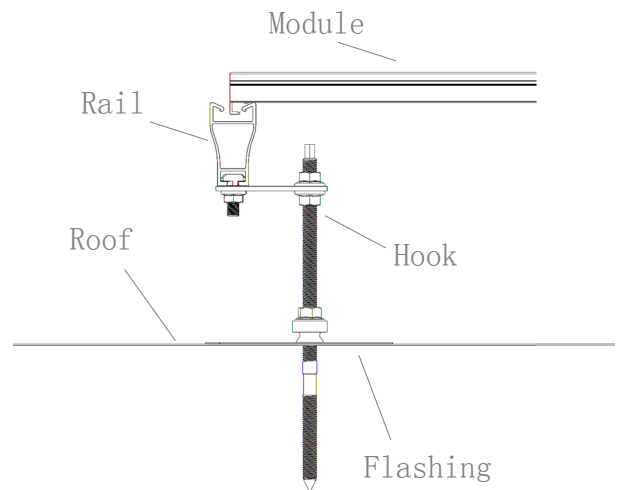
Step 3

During installation, follow the suggested sequence and install components A–H of the 4L2 array from top to bottom (Note: Ensure that all DC connectors are installed on the same side; otherwise, subsequent connections will not be possible).



Step 4

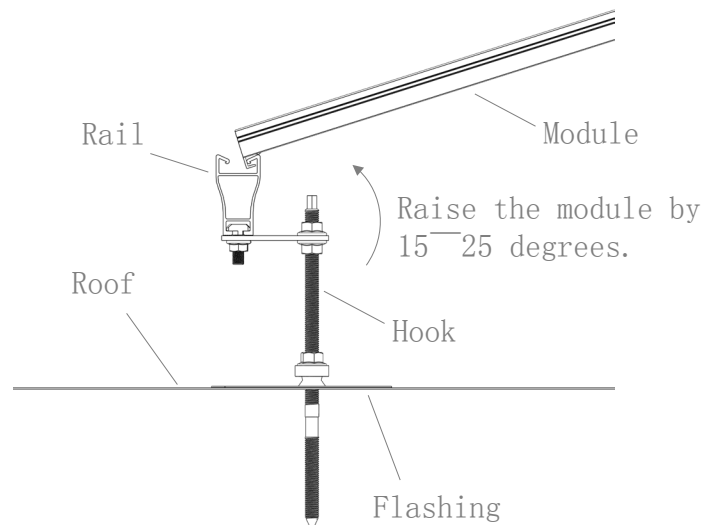
Solar photovoltaic module A and B installation:
Place modules A and B flat on the track groove, aligning their outer sides with the outer edges of the track.



Step 5

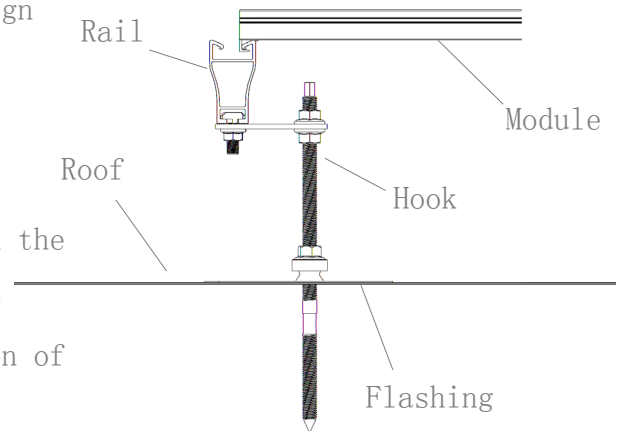
Solar photovoltaic module A and B installation:

Installation personnel should grip modules A and B from their inner sides with a slight force, then lift module A to an angle of 15–25 degrees.



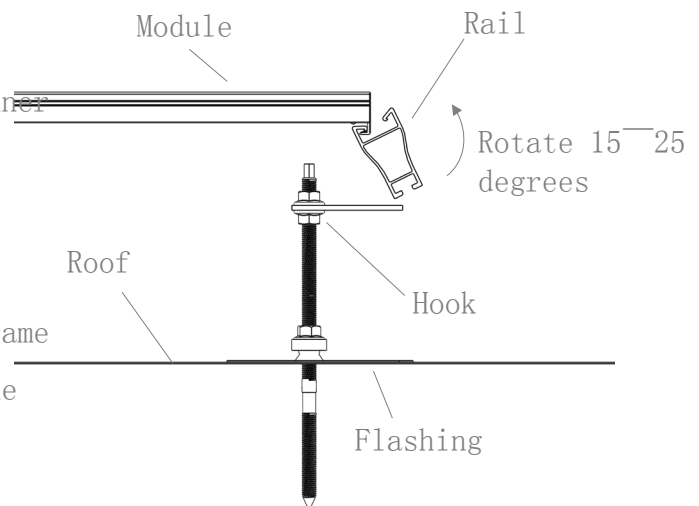
Step 6

Place modules A and B flat. Confirm that the frame grooves of the modules align with the flanged edges on the inner sides of the purlins (Note: You can determine if they are installed correctly by feeling a protrusion on the inner side). Completion of this step signifies the successful installation of modules A and B on this side.



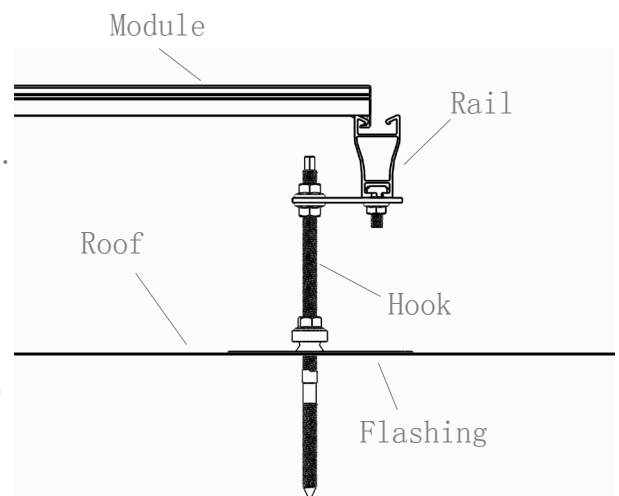
Step 7

Through collaboration, insert the inner grooves of modules A and B into the corresponding track grooves on the opposite side. Rotate the tracks by 15°–25 degrees to ensure that the frame grooves of the modules align with the inner grooves of the tracks.



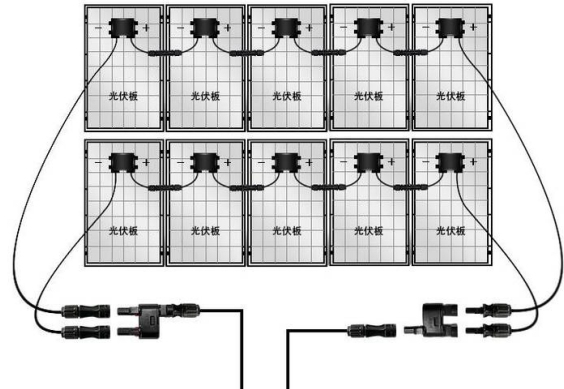
Step 8

Align the bottom surfaces of the tracks with the hook faces (Note: Adjust the track according to the position of the hook's slotted hole). Tighten the T-shaped bolts at the track connection points, completing the installation of modules A and B. Secure the DC lines of modules A and B to the track using zip ties. This will prepare for connecting the DC lines of modules C and D.



Step 9

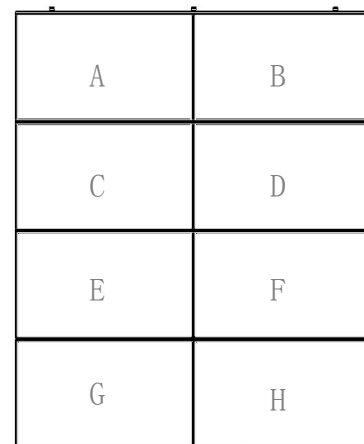
Place module C onto the second track. Insert the DC line of module C into the corresponding connector on module A (Note: Ensure the DC line is suspended). Secure the DC line of module C to the track using zip ties. Follow this procedure for modules D–H.



Note: This diagram is for illustration only. Please refer to the specific component style and design requirements for connections.

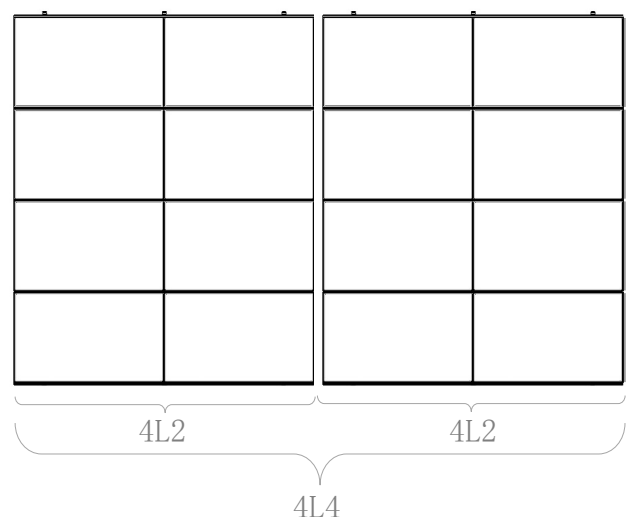
Step 10

Repeat the installation steps for modules A–B to sequentially install modules C–D, E–F, G–H.



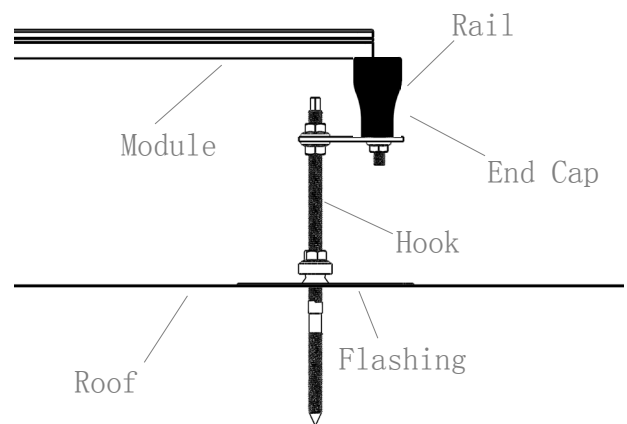
Step 11

Following the above steps, install another set of 4L2 arrays. Completion of this step signifies the successful installation of the 4L4 residential roof array.



Step 12

Install end caps on the outer sides of tracks in each array. Note: Adjacent tracks in two 4L2 arrays do not require end caps.



Step 13

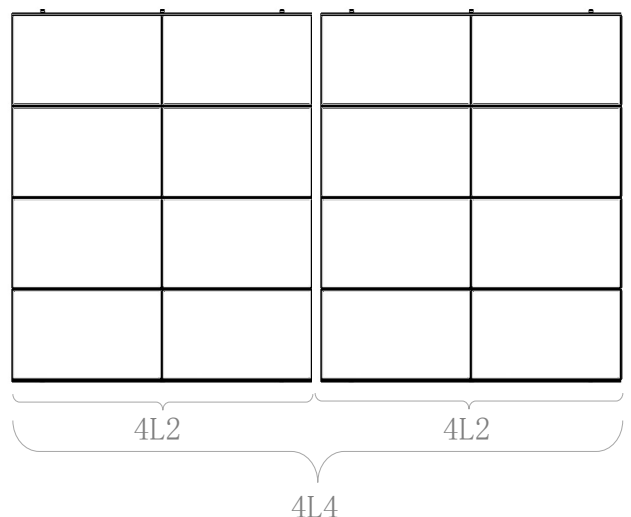
Use a grounding wire to connect adjacent 4L2 arrays via T-shaped connections (specific details can be found in the diagram below).



System Self-Check

1. Self-Check

- ① Is the installation of modules and brackets secure and reliable?
- ② Has the grounding of the modules been completed?
- ③ Does the tilt angle deviation meet the requirements?
- ④ Install the end cover on the outer side of the rail.



Pv module acceptance and commissioning table

PV Module Inspection and Commissioning Test Form			
Project Number		Project Name	
Project Address			
Contact Person		Phone	
System Capacity		Grid Connection Voltage	
Completion Time		Inspection Date	
Weather Conditions on Inspection Day		Inspection Time	
To be completed by on-site inspection personnel			
No.	Inspection Item	Inspection Content	Pass/Fail
1	PV Modules	Installation Position and Layout	
2		Array Alignment Deviation	
3		Module Quantity	
4		Module Model	
5		Visible Damage or Deformation	
6		Batch Installation	
7	Fixed Supports	Support Flatness and Reliability	
8		Construction Tilt Deviation	
9		Orientation Deviation	
10		Support Corrosion Protection Standards	