ModuRack™

2P13

Ground Mount

Double-Pole
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)

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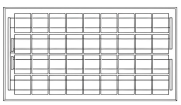
Main Components List

No.	Materials	Specification	Unit	Quantity	Image
1	Diagonal Beam	XZ120×50×15×1.8	Piece	4	
2	Bolt	M12×L30	Set	20	
3	T-Bolt	TM10×L25	Set	10	
4	Short Post	⌀ 60×H1370×2.5 Steel Pipe	Piece	5	
5	Long Post	⌀ 60×H2107×2.5 Steel Pipe	Piece	5	
6	Bolt	M12×L85	Set	12	
7	Eye Bolt	M12×L85	Set	8	
8	Mounting Base		Piece	10	
9	Horizontal Support Rod	⌀ 10 × H3540mm Round Steel	Set	4	
10	Inter-Post Support Rod	⌀ 10×H3400mm Round Steel	Set	4	
11	Helical Pile	⌀ 108×H1500mm	Piece	10	
12	Purlin	U62×41×2.0	Piece	14	
13	PV Module	72/580w/L2278×W1134×H30mm	Piece	26	
14	Bonding Clip	304Stainless Steel	Piece	104	

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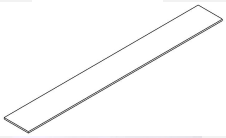
Items Required

No.	Item	Image
1	Long & Short Tape Measure	
2	Socket Torque Wrench	
3	Impact Electric Wrench(M10-12) Socket	
4	Gloves	
5	Safety Shoes	
6	Safety Helmet	
7	Reflective Vest	
8	Rangefinder	
9	Tool Board	
10	Power Strip	
11	Compass	
12	Chalk line	

2P13 MagicSolar System

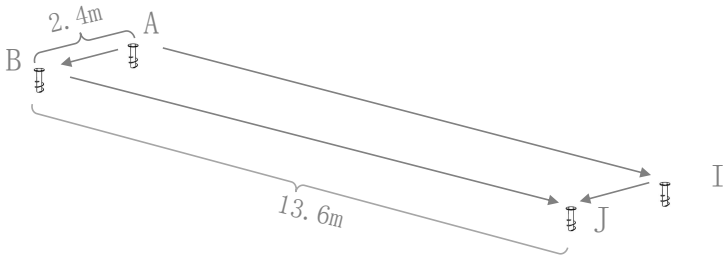
Bracket Installation Process

I. Positioning of Photovoltaic Helical Piles

Step 1

① Determine the position of helical piles at four corner points A, B, I, J of the 2P13 photovoltaic system array

② Use chalk line to determine the rectangular frame with row spacing of 2.4m and column spacing of 13.6m (diagonal check is needed to prevent parallelogram)

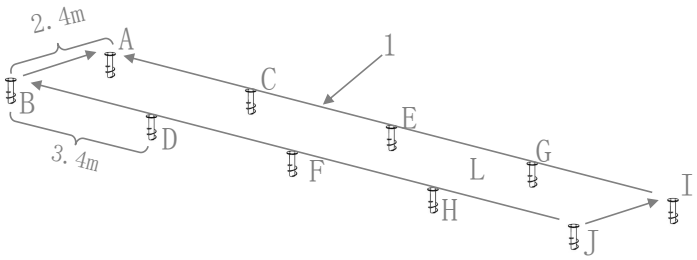


Note: A, B, I, J are the outermost corner points of the photovoltaic array helical piles

II. Setting of Photovoltaic Helical Piles

Step 1

Based on the positions of the four corner helical piles, set the positions for photovoltaic helical piles C to L, with row spacing of 2.4m and column spacing of 3.4m (diagonal check is needed to prevent parallelogram)

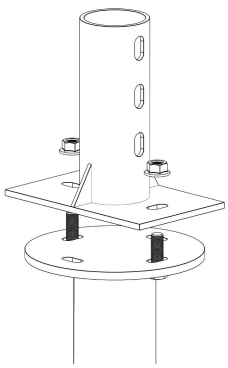


Note: 1—Hemp rope (for level adjustment)）

III. Installation of Column Base

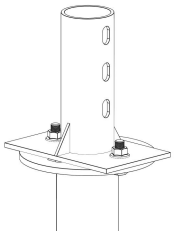
Step 1

Insert the base plate of the bracket base aligning the bolt holes with the reserved screw holes on the helical pile

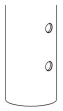


Step 2

Use M12 double nuts for tight fixation

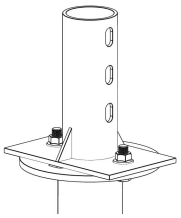


IV. Column Installation



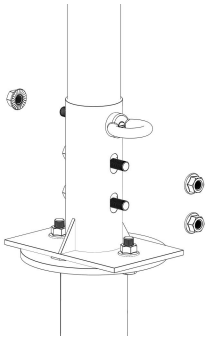
Step 1

According to the designed angle, insert long and short columns into the steel pipes of the bracket base respectively



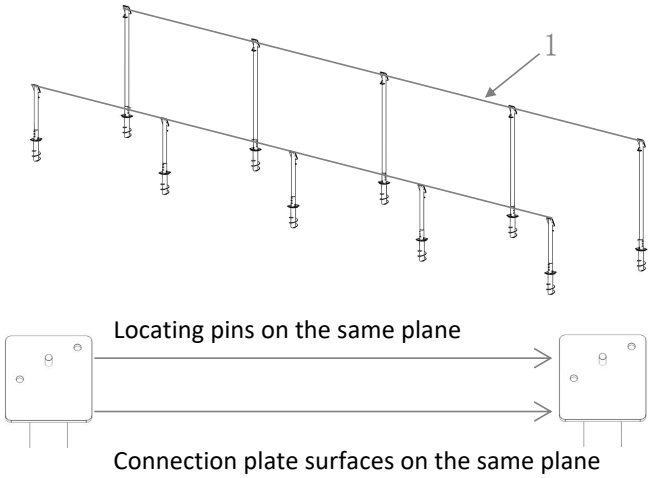
Step 2

Fix the long and short columns using corresponding bolts



Step 3

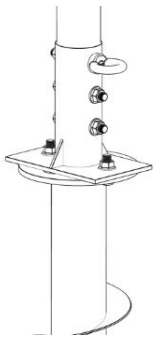
Use the pull-wire method to adjust the connection plates of long and short columns, keeping all locating pins and connection plate surfaces on the same level



Note: 1—Hemp rope (for level adjustment)

Step 4

After level adjustment is completed, tighten the fixing nuts between the column and bracket base

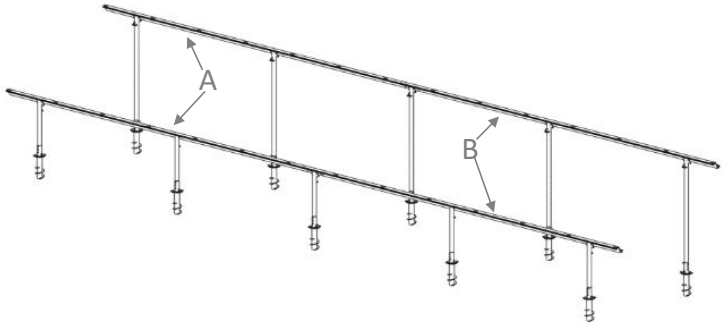


Note: 1—Hemp rope (for level adjustment)

V. Diagonal Beam Installation

Step 1

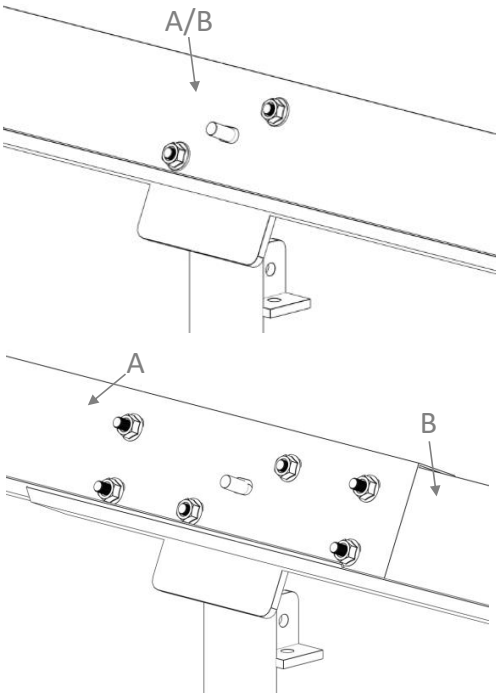
The complete diagonal beam is formed by overlapping diagonal beams A and B (at the overlapping point, diagonal beam A is on top of diagonal beam B)



Note: A—Diagonal beam B—Diagonal beam

Step 2

Position each diagonal beam through the locating pins on the L-shaped connection steel plates of three adjacent columns (at the overlapping point, diagonal beam A is on top of diagonal beam B), and tighten with M12 bolts

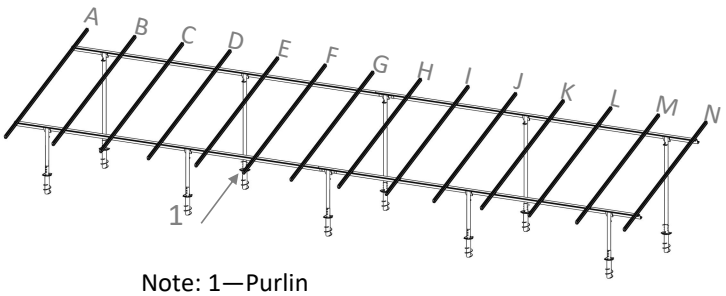


Note: A—Diagonal beam B—Diagonal beam

VI. Purlin Setup

Step 1

Install each purlin from A to N with a center spacing of 1152mm

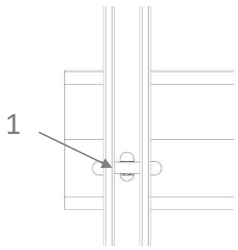


Note: 1—Purlin

Step 2

① Tighten the T-bolts at purlin A

② Do not tighten the T-bolts for purlins B to N, ensuring the purlins can rotate 15~25 degrees



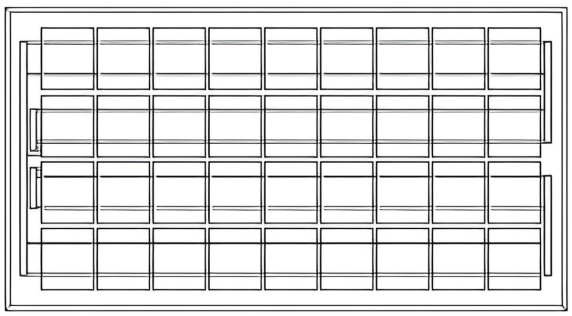
Note: 1—T-bolt

Module Installation Process

I. Photovoltaic Installation

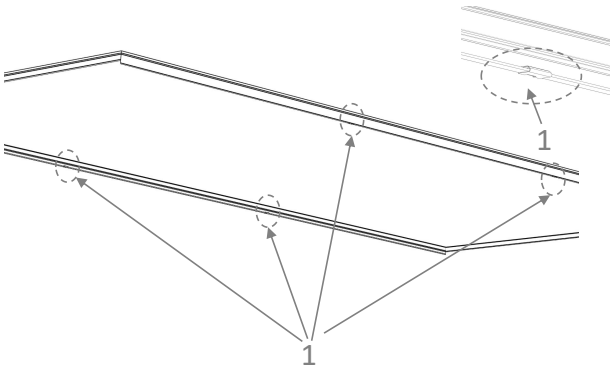
Step 1

Check if the photovoltaic modules are intact



Step 2

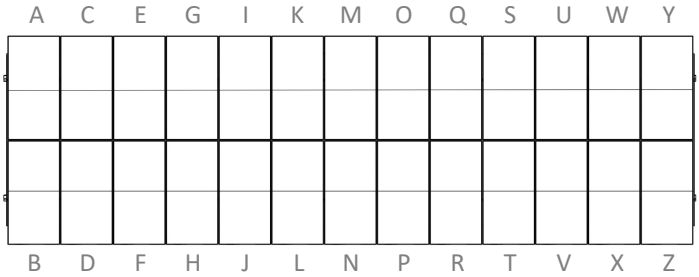
Install 4 specially-made conductive locking pieces for each group of photovoltaic modules (each piece should be at least 700mm away from the short edge of the outermost module)



Note: 1—Install two conductive locking pieces on each side

Step 3

Install photovoltaic modules in order from A to Z

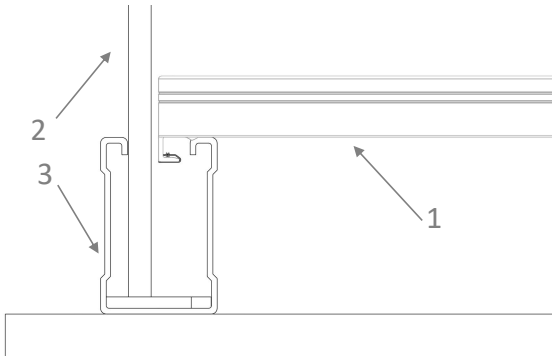


Step 4

Installation of photovoltaic module A:

① Insert tool board into the purlin groove

② Place one side of the photovoltaic module in the purlin groove



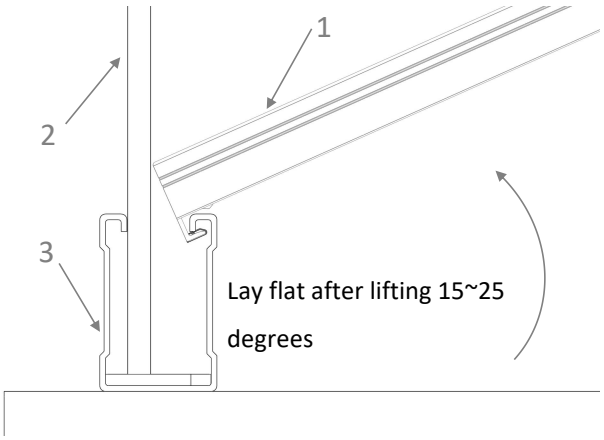
Note: 1—Photovoltaic module 2—Tool board 3—Purlin

Step 5

Installation of photovoltaic module A:

① Lift the other side of photovoltaic module A by 15~25 degrees, then lay it flat

② After ensuring the inner groove of the module frame aligns with the inner curled edge of the purlin, complete the installation on this side



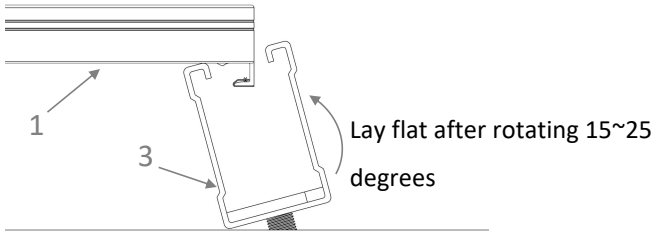
Note: 1—Photovoltaic module 2—Tool board 3—Purlin

Step 6

Installation of photovoltaic module A:

① Rotate the purlin on the other side by 15~25 degrees, ensure the inner groove of the module frame aligns with the inner curled edge of the purlin, then lay the purlin flat

② Tighten the T-bolt at this position to complete the installation of photovoltaic module A



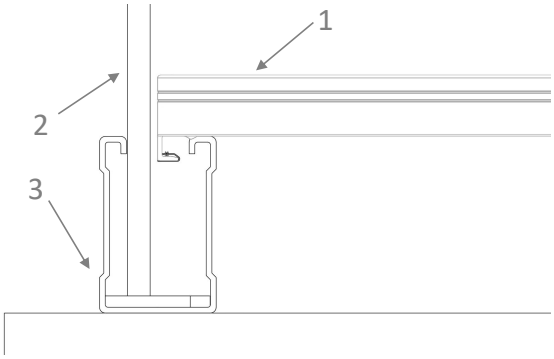
Note: 1—Photovoltaic module 3—Purlin

Step 7

Installation of photovoltaic module B:

① Insert tool board into the purlin groove

② Place one side of the photovoltaic module in the purlin groove



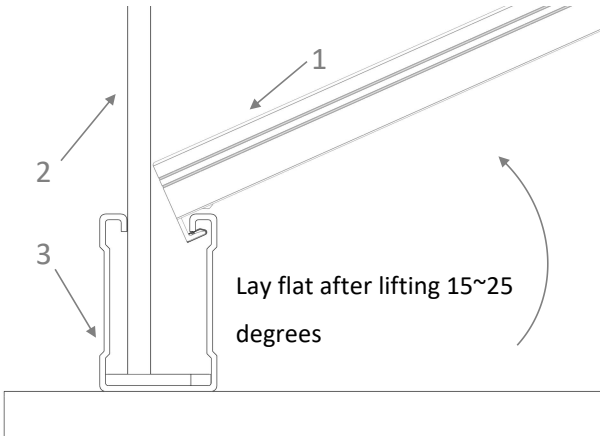
Note: 1—Photovoltaic module 2—Tool board 3—Purlin

Step 8

Installation of photovoltaic module B:

① Lift the other side of photovoltaic module B by 15~25 degrees, then lay it flat

② After the inner groove of the frame aligns with the inner curled edge of the purlin, complete the installation on this side



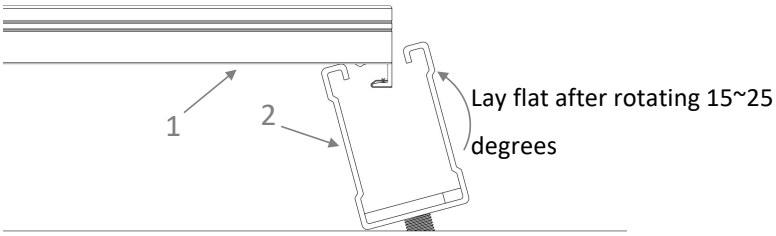
Note: 1—Photovoltaic module 2—Tool board 3—Purlin

Step 9

Installation of photovoltaic module B:

① Rotate the purlin on the other side by 15~25 degrees, ensure the inner groove of the frame aligns with the inner curled edge of the purlin, then lay the purlin flat

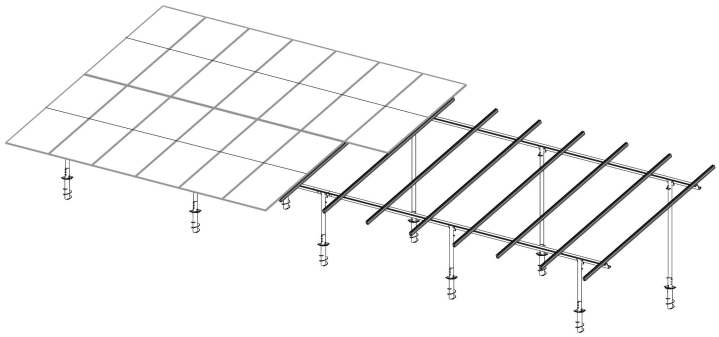
② Tighten the T-bolt at this position to complete the installation of photovoltaic module B



Note: 1—Photovoltaic module 2—Purlin

Step 10

After completing the installation of photovoltaic modules A and B, install the remaining modules following the above steps

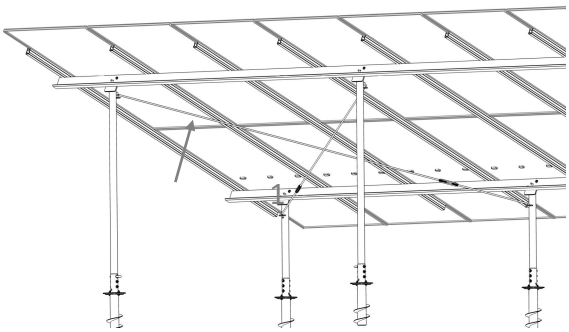


Bracing Installation Process

I. Horizontal Support Rod Installation

Step 1

Between the outer columns, use ⌀ 10mm round steel (hook) for support. The hooks connect to the M12 eye bolts on the low column support and the hanging ears on the high column. Use basket nuts to adjust and tighten between the long and short round steel



Note: 1—Horizontal support rod

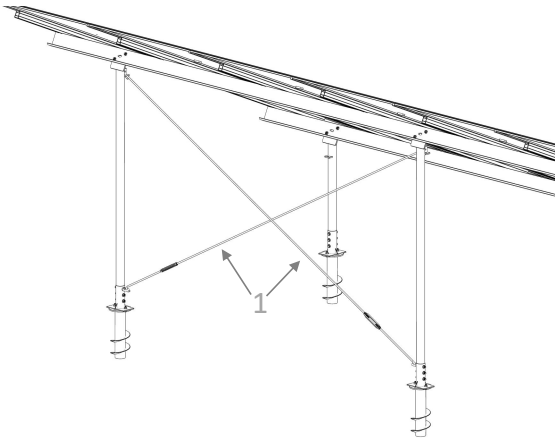
Step 2

Complete the installation of the remaining set of inter-column supports according to the construction drawing following the above steps

II. Inter-column Support Rod Installation

Step 1

Use ⌀ 10mm round steel (hook) as inter-column support rod. The hooks connect to the M12 eye bolts at the base of the high column and the hanging ears on the high column. Use basket nuts to tighten between the long and short round steel



Note: 1—Inter-column support rod

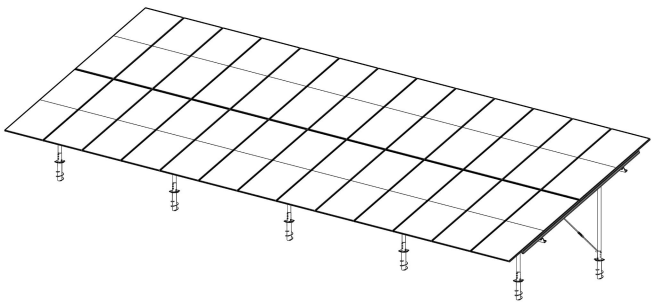
Step 2 :

Complete the installation of the remaining set of inter-column supports according to the construction drawing following the above steps

Installation Complete

I. Completion of Photovoltaic Modul

Schematic diagram after completion of 2p13 photovoltaic module installation



Self-inspection Process

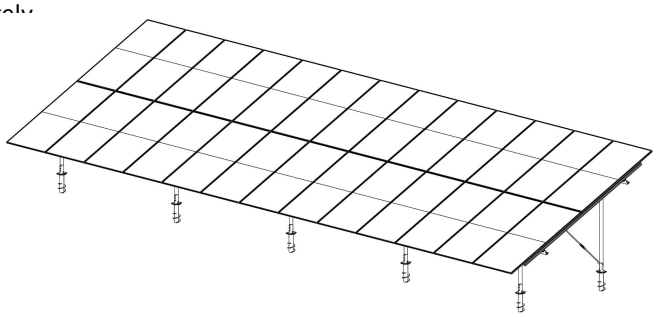
I. Self-inspection

① Are the modules and brackets installed securely and reliably?

② Are the modules properly grounded?

③ Does the tilt angle deviation meet the requirements?

④ Does the azimuth angle deviation meet the requirements?



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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	