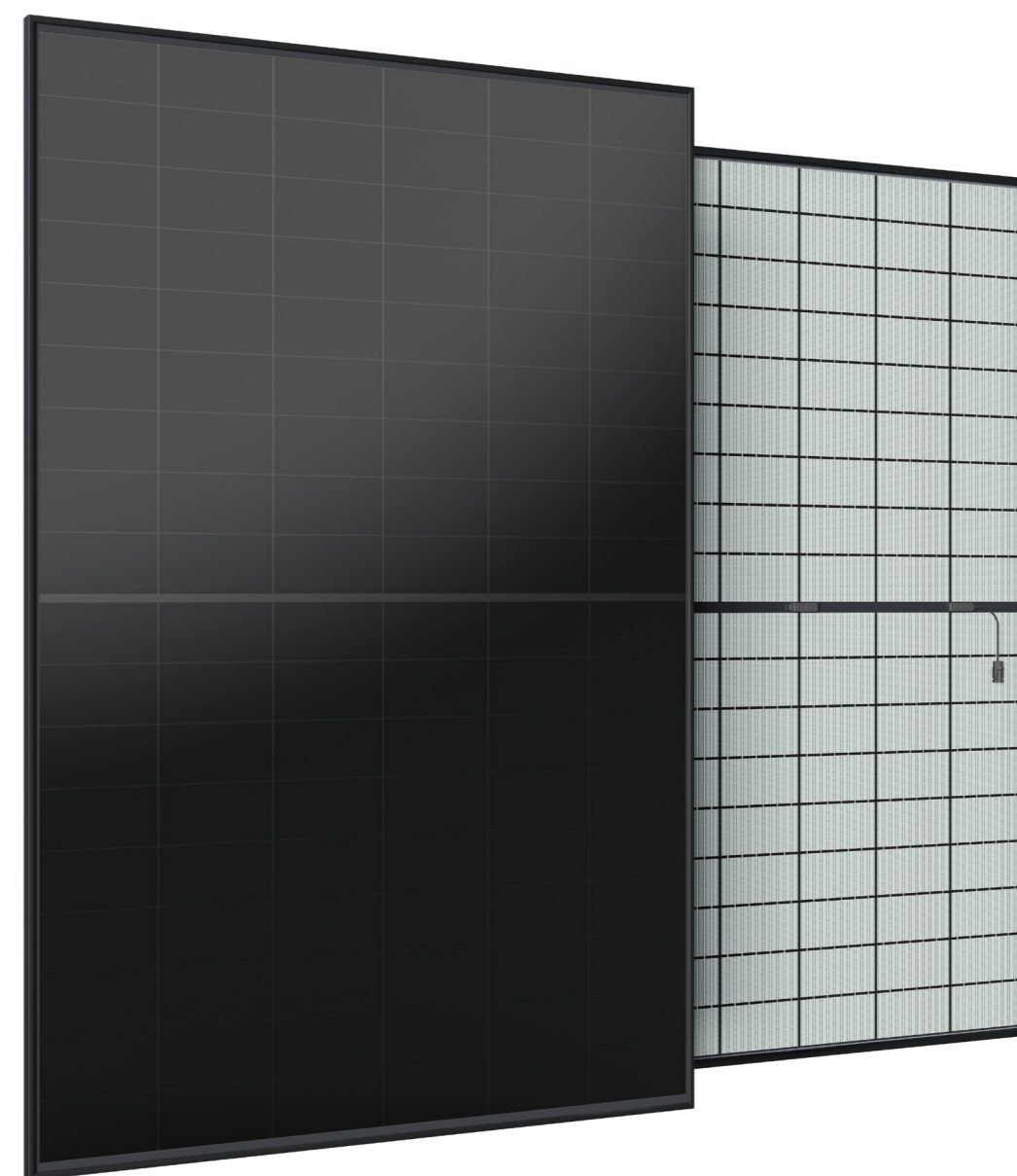


AIKO PV Module Installation Manual

Double Glass Module



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AIKO PV Module Installation Manual Double Glass Module

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Website: www.aikosolar.com

Double Glass Modules Installation Manual, version 2.0,
August 2023



Applicable module models

Module structure

AIKO-Axxx-MAH54Dw	AIKO-Axxx-MAH72Dw	Double Glass
AIKO-Axxx-MAH54Db	AIKO-Axxx-MAH72Db	

Table 1: Applicable modules models



Important safety instructions

- This Installation Manual provides information regarding the installation and safe use of PV power modules (hereinafter referred to as "modules") produced by AIKO Digital Energy Technology Co., Ltd. (hereinafter referred to as "AIKO"). Installation and day to day maintenance of modules shall be in accordance with all safety precautions specified in this Manual and local laws.
- Installation module systems requires specialized skills and knowledge, and modules shall be installed and maintained by qualified persons. The installers shall be familiar with mechanical and electrical requirements of the system. Please keep this Manual for future maintenance or treatment.

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01 Overview

Thank you very much for choosing the products of AIKO Digital Energy Technology Co., Ltd. (hereinafter referred to as "AIKO"). This Installation Manual contains important information regarding electrical and mechanical installation which you shall know before installing modules. It also contains some other safety information that you must be familiar with.

This Installation Manual is not intended as any warranty, expressed or implied. Nor does it include any indemnification plan against loss, module damage or other expenses directly arising out of or in connection with the installation, operation, use or maintenance of modules. No null without prior notice.

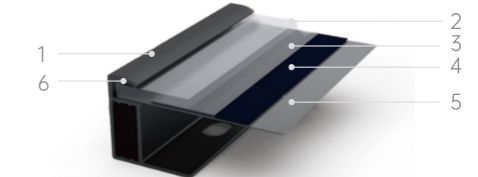
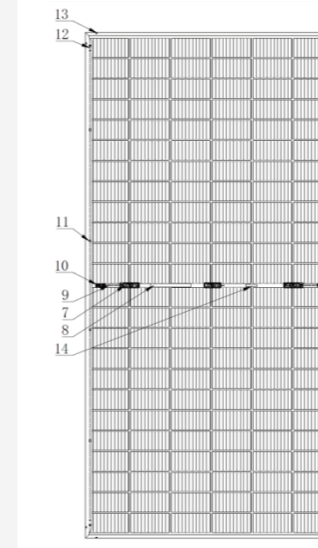
Customer's failure to install modules according to the requirements listed in this Installation Manual will invalidate the limited product warranty offered to customer. Recommendations in this Manual are provided to improve installation safety, and are based on tests and practical experience. Please provide this Manual to end customers (or consumers) and inform them of all safety, operation and maintenance requirements and recommendations.

02 Laws and acts

Mechanical and electrical installations of PV modules shall be executed by referring to the applicable laws and acts, including the electrical act, building act and electrical connection requirements. These requirements vary from one location to another, such as building rooftop installations and onboard applications. They may also vary with mounting system voltage and current property (DC or AC). Please contact your local authority for further details.

03 General information

Structural diagram of double glass modules and component description



1 Aluminum alloy frame	6 Silicone	11 Mounting hole
2 Front glass	7 Junction Box	12 Grounding hole
3 EVA	8 Nameplate	13 Leak hole
4 ABC cell	9 Cable	14 Barcode
5 Back glass	10 Connector	

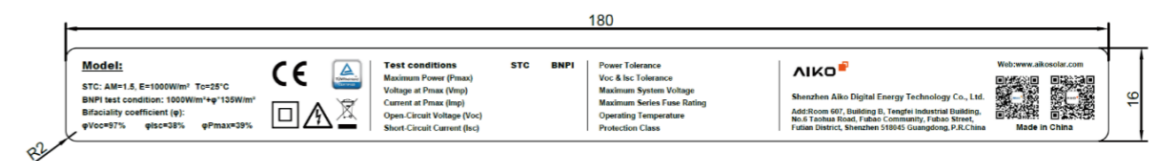
3.1 Module identification

AIKO modules provide Two visual labels:

Nameplate Product type, information regarding the rated power, rated current, rated voltage, open circuit voltage, short circuit current under standard test conditions (STC), maximum system voltage and certification mark, etc.

Serial number Each individual module is identified with a unique serial number which is printed on the barcode and placed into the module before lamination such that it cannot be torn or daubed after lamination. The same serial number can also be found at the side of frame of module as well as at the back of module .









































Nameplate



Barcode labeling



Packing List Packing list including the information of the module type, product serial number, package weight, package dimension as well as cells color classification. To ensure consistency of the overall color of system when the customer use the modules, the box of modules is packaged according to the same color of cells and marking the with S1, S2, S3, on the packing list. Following as an sample:

 Packaging List					
Pallet No.	A123224013		Module Power	450 W	
			Qty	31 PCS	
			Color Code	S1	
Product No.	63000161		Bin Code	12345678912345	
Module Type	AIKO-A450-MAH54Dw				
Product Description	450/A/12BB/1722*1134*35mm/FT50xy,25A,FMK5040D,RHC2xyzu,350mm/A123224013				
N.W.	756.0KG	G.W.	801.0KG	Package Size	1770*1140*1275mm
S/N:2D					
			Remark:		
Made in China					
NO.	Serial Number	NO.	Serial Number	NO.	Serial Number
1	 M012201P00100001	2	 M012201P00100001	3	 M012201P00100001
4	 M012201P00100001	5	 M012201P00100001	6	 M012201P00100001
7	 M01220101P0010001	8	 M01220101P0010001	9	 M01220101P0010001
10	 M012201P00100001	11	 M01220101P0010001	12	 M01220101P0010001
13	 M01220101P0010001	14	 M01220101P0010001	15	 M01220101P0010001
16	 M01220101P0010001	17	 M01220101P0010001	18	 M01220101P0010001
19	 M01220101P0010001	20	 M01220101P0010001	21	 M01220101P0010001
22	 M01220101P0010001	23	 M01220101P0010001	24	 M01220101P0010001
25	 M01220101P0010001	26	 M01220101P0010001	27	 M01220101P0010001
28	 M01220101P0010001	29	 M01220101P0010001	30	 M01220101P0010001
31	 M01220101P0010001	32	 M01220101P0010001	33	 M01220101P0010001
34	 M01220101P0010001	35	 M01220101P0010001	36	 M01220101P0010001

3.2 Wiring method

The junction box of AIKO modules is located in the middle position. Please refer to the table below for how to connect AIKO modules in series.

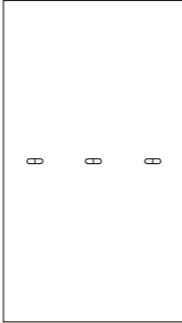
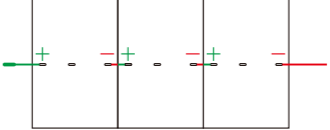
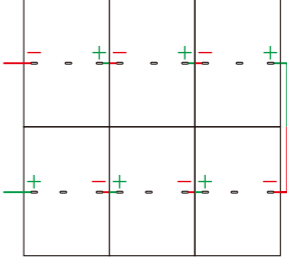
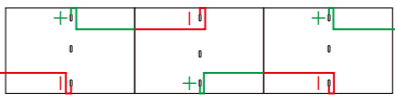
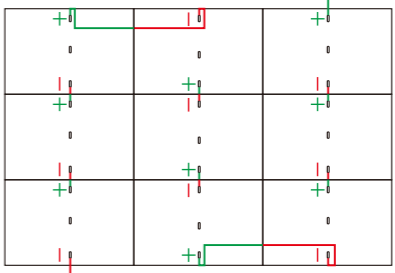
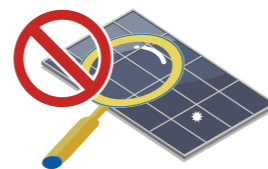
Position of junction box	Module mounting type	Connection diagram
	Mounting on the long side, single row	 <p>Horizontally adjacent modules are directly connected at the shortest distance or, if the wire is too long, by placing the wire into the secondary beam.</p>
	Mounting on the long side, double rows	 <ol style="list-style-type: none"> Horizontally adjacent modules are directly connected at the shortest distance or, if the wire is too long, by placing the wire into the secondary beam; Connections between adjacent rows of modules shall be designed and installed by considering the opposite polarity on the same side as shown below. Adjacent modules are side connected by routing the wire through a duct instead of using an uncovered wire.
	Mounting on the short side, single row	 <p>In vertical installation, connections between vertically adjacent modules are de- signed and installed with opposite polarities between adjacent modules as shown and the extension line can be placed into the secondary beam.</p>
	Mounting on the short side, multiple rows	 <ol style="list-style-type: none"> Vertically adjacent modules as shown below are connected at the shortest di- stance; Connections between adjacent columns of modules shall be designed and installed by considering the opposite polarity on the same side as shown below. Adjacent modules may be side connected by placing the wire into the secondary beam.

Table 2: Connection diagram as per mounting type

3.3 General safety

AIKO modules are designed to operate in application according to IEC standards IEC-61215 and IEC-61730. Modules are designed with safety class II and fire class rating C.

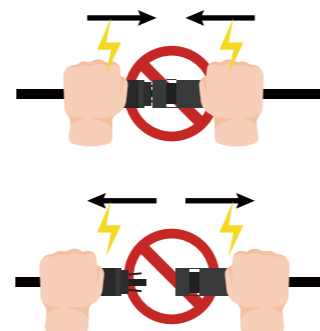
- Before to handle and install AIKO PV module, read carefully and understand this Installation Manual. If you need any explanation, contact AIKO (aikosolar.com)
- Always use appropriate protections such as insulated tools, safety helmets, insulating gloves, safety belts and safety insulating shoes when handling the module whether it is or not connected to the system. Please use appropriate electrical safety tools when you need to install, ground, connect, clean or handle the module.
- PV modules generate DC electrical energy when exposed to sunlight or other light source. Improper contact with live parts of the module (e.g. connectors) can result in burns, sparks, and lethal shock.
- Observed local laws and regulations for module installation and obtain a building license or other qualifications where necessary.
- Modules shall be installed by qualified persons who have specialized skills and knowledge and are familiar with the mechanical and electrical requirements of the system. Potentially harmful risks during installation, including electrical shock, shall be identified in advance.
- Rooftop systems can only be installed on the roofs which have passed the evaluation of construction experts with formal, full structural analysis results, where necessary.
- Observed the safety regulations for all mounting components. For example, wires and cables, connectors, inverters and batteries.
- Artificially concentrated sunlight shall not be directed onto the module.



3.4 Electrical safety

Please strictly follow the electrical safety precautions below to avoid any form of electrical safety accident.

- Modules can generate DC voltage $>30V$, current $>10A$ under standard temperature condition (STC), Take care to avoid direct contact. When installing modules, wear protective helmets, insulating gloves, and rubber shoes. Do not install components without security precautions.
- Do not drill holes in the frame, this action risks module insulation failure.
- Do not make electrical connection by means other than connectors.
- Broken modules have the risk of electric shock and fire that must be replaced immediately.
- Module should be installed when it is electrically safe to do so.
- Avoid touching modules as the surface and frame of the modules may be hot and there is a risk of burns or electric shock. The voltage connected in series of the modules must not exceed the maximum withstand voltage value.
- Do not connect or disconnect the module when there is a current leakage of module or when there is an external current present. Please disconnect the faulty modules with safety protection.

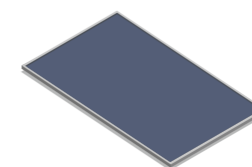


3.5 Handling safety

- Standing, stepping, sitting, walking or jumping directly on the module package or module is prohibited.



- Do not place heavy objects on the module.



- Do not connect the positive and negative anode cables of the same PV module together.
- Do not open the packing box before the modules arrive at the location, keep the packing box in a ventilated, dry environment.
- During the transportation, please refer to 4.0 Storage and Transportation instructions. Any inappropriate handling and storage can result in breakage of glass or loss of electrical property, and consequently loss the use value of modules.
- Take careful when install the modules, In any case, it is forbidden to lift the module by lifting the junction box or cable. At least two or more than two operators must hold the edge of the module with both hands.
- Do not try to dismantle the module or remove any nameplates or components of modules.
- Do not apply paint or other adhesives to module top surface.
- Do not damage or scratch the glass on front side and back side of module.
- Do not drill holes on the frame of module, which may reduce frame loading capacity and lead to frame corrosion and invalidation of the limited warranty provided for customers.
- Do not scratch anodized coating of aluminum alloy frame except for grounding connection. Scratch may lead to frame corrosion and reduce frame loading capacity and long-term reliability.
- Do not repair or modify the module on your own.

3.6 Fire safety

Please refer to local laws and regulations before installing any module and observe their building fire safety requirements.

Rooftop installations shall be placed over fire resistant roof coverings appropriate for this rating, and adequate ventilation shall be provided between the back cover and the mounting surface. The roof structure and module mounting method will affect the fire safety performance of the building. Inappropriate insta

Tilt angle of PV modules is the angle between the PV module and the horizontal ground. Different projects shall choose different installation inclination angles according to local conditions.

All modules in the same array shall be of the same orientation and angle. Different orientations and angles will result in different total solar irradiation absorbed by modules, leading to output mismatch that degrades system operating efficiency.

In order to achieve the maximum annual generating capacity, the opti

Under no circumstances should the clamp touch the glass or deform the frame. Be sure to avoid shadowing effect from the pressure clamp.

Be sure that pressure clamps will not fail due to deformation or corrosion while the entire module is under load. Pressure clamps > 50 mm in length and >3 mm in thickness are recommended. The overlapped distance between the pressure clamp and the module frame, D, shall be at least 7 mm but no more than 10 mm.

When choosing clamp-mounting, please be sure to use at least four clamps on each module. Depending on the local wind and snow loads, if excessive pressure is

Module model	Module size [mm]	Load [Pa]	Installation area D	
			30mm frame	35/40mm frame
AIKO-A***-MAH54Dw AIKO-A***-MAH54Db	1722*1134	+5400/-2400	$310 \leq D \leq 410$	$350 \leq D \leq 450$
AIKO-A***-MAH72Dw AIKO-A***-MAH72Db	2278*1134	+5400/-2400	$430 \leq D \leq 530$	$450 \leq D \leq 550$

Table 3: Double glass modules clamp mounting diagram and corresponding loads, long frame (A)

(B) CLAMP MOUNTING - SH

6.2.4 Double glass modules bolt mounting diagram and corresponding loads

Double glass modules bolt mounting diagram and corresponding loads as below diagram

(D) BOLT MOUNTING - TRANSVERSAL

It is important to ensure the bolts do not fail due t

The electrical performan

PV module' s junction boxes with the IP68 protective level and compose



Base

Nut

The power output of modules is related to incident light intensity and can be reduced by dust collection or other shadings.
Dirt on modules

9.2 Visual checks of the modules

Visually checks for visual defects on modules, such as:

- Whether the module glass is broken;
Whether the back cover of the module is cracked or otherwise abnormal;
Whether the junction box is damaged or the cable is broken;
Whether the module is shaded by foreign matter or shadows;
Check whether the bolts fixing the module to the racking are loose or