



AU SPECIAL LIMITED WARRANTY

REV.SAU20211122-LINEAR FOR AUSTRALIA

JINKO SOLAR AUSTRALIA HOLDINGS CO. PTY LTD. (“**Jinko**”) generally provides the Warranties set forth herein to the original purchaser and its permitted successors and assigns (“**Customer**”) with respect to the special solar photovoltaic modules as exclusively listed below sold by Jinko under purchase agreements signed on or after November, 22nd, 2021 (“**Modules**”), subject to the terms and conditions herein (“**Limited Warranty**”). Jinko and Customer may hereinafter be referred to each as a “**Party**” and collectively as the “**Parties**”.

1. **WARRANTY START DATE.** Jinko provides the Warranties set forth herein commencing upon the earlier of delivery of Modules to the original purchaser thereof or that date which is one hundred and eighty (180) days following the Module manufacture date, as indicated by the serial number [digit no. 7 – 12 (YYMMDD), starting from the left side of the serial number] for such Module (“**Warranty Start Date**”).

2. **LIMITED PRODUCT WARRANTY.** Beginning on the Warranty Start Date and terminating on that date which is two hundred and forty (240) months thereafter for JKMxxxN-6RL3(xxx= 385W-410W), JKMxxxN-6RL3-V(xxx=385W-410W), JKMxxxN-6TL3(xxx=355W-375W), JKMxxxN-60HL4, JKMxxxN-60HL4-V, and three hundred (300) months thereafter for JKMxxxN-6RL3 (xxx=415W), JKMxxxN-6RL3-V(xxx=415W), JKMxxxN-6RL3-B, JKMxxxN-6RL3-B-V, JKMxxxN-60HL4-B; Jinko warrants that the Module and its respective DC connector and cables, if any, shall be free from material defects in design, materials and workmanship that impair the performance of the Module (“**Limited Product Warranty**”). Material defects shall not include normal wear and tear.

3. **LIMITED POWER WARRANTY.** Jinko warrants that the Degradation Rate shall not exceed the amount for the applicable period following the Warranty Start Date as set forth below (“**Limited Power Warranty**”):

For **Modules**, only applicable to the following mono-crystalline Module types:

JKMxxxN-6RL3 (xxx= 385W-410W),
JKMxxxN-6RL3-V(xxx= 385W-410W),
JKMxxxN-6TL3 (xxx= 355W-375W),
JKMxxxN-6TL3-V(xxx= 355W-375W),
JKMxxxN-60HL4,
JKMxxxN-60HL4-V,
JKMxxxN-6RL3 (xxx=415W),
JKMxxxN-6RL3-V (xxx=415W),
JKMxxxN-6RL3-B,
JKMxxxN-6RL3-B-V,
JKMxxxN-60HL4-B

(i) 1% in the first year; (ii) 0.4% each year thereafter until that date which is thirty (30) years following the Warranty Start Date, at which time the Actual Power Output shall be not less than 87.4% of the Nominal Power Output.

4. **POWER DEFINITIONS.** “**Nominal Power Output (PO₀)**” means the original manufactured nameplate specification of the Module, expressed in Watts, as certified by Jinko and indicated on the Module, excluding any specified positive tolerance. “**Actual Power Output (PO_t)**” means the power output of the Module, expressed in Watts, at Watt peak that a Module generates (or, for BIFACIAL SERIES, that the front-side of a Module generates) at a given point in time in a year after the Warranty Start Date (**t**) in its ‘Maximum Power Point’ under Standard Test Conditions, corrected for any measurement error (“**STC**”). STC are as follows, measured in



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accordance with IEC 61215: (a) light spectrum of AM 1.5; (b) an irradiation of 1000W per m²; and (c) a cell temperature of 25 degrees centigrade at right angle irradiation. The “**Degradation Rate (DR)**” shall be any positive amount calculated in accordance with the following formula, expressed as a percent:

$$DR = 1.00 - [(PO_i) / (PO_0)]$$

5. CLAIMS. Customer shall bear the burden of establishing a breach of the Warranties hereunder. If Customer believes there has been a breach of the Limited Product Warranty or Limited Power Warranty (collectively, “**Warranties**”), then Customer shall promptly, and not later than thirty (30) days after knowledge thereof, provide notice to Jinko setting forth the following information related to the claim: (a) party making claim; (b) detailed description; (c) evidence, including photographs and data; (d) relevant serial numbers; (e) Warranty Start Date; (f) Module type; (g) physical address; (h) any additional evidence reasonably requested by Jinko; and (i) upon request from Jinko, the actual Module(s) allegedly causing the breach. Notwithstanding anything to the contrary herein, Jinko shall be entitled, in Jinko’s sole discretion upon written notice to Customer, to require that any breach of the Warranties alleged by Customer be reviewed by TÜV Rheinland, TÜV SÜD or other neutral third party testing laboratory selected by Jinko and approved by Customer, such approval not to be unreasonably withheld or delayed (“**Independent Testing Lab**”). The power measurement tolerance of any testing equipment utilized by any Independent Testing Lab in performing tests required by this Section 5 shall be disclosed in writing to both Parties prior to performance of any such tests and shall be

reflected in any final test results provided by the Independent Testing Lab. The determination by an Independent Testing Lab as to whether a breach has occurred shall be final and conclusive with respect to the matters covered by such determination. Jinko shall be responsible for all costs incurred by it in connection with the shipment by Customer of a Module pursuant to Section 5(i) hereto and any Independent Testing Lab’s services provided pursuant to this Section 5, including shipping, testing services, storage, insurance and any Module destruction incidental thereto; provided, however, Customer shall promptly upon receipt of notice indemnify Jinko for all such costs on a dollar-for-dollar basis in the event the Independent Testing Lab is unable to confirm a breach of the Warranties or, if no Independent Testing Lab was utilized, Customer is otherwise unable to establish a breach of the Warranties.

6. REMEDIES. In Jinko’s sole discretion, Jinko shall repair, replace or provide additional modules compensating for the related power loss for any Module which causes a breach of the Warranties. Additional, repaired or replacement Modules shall be delivered to the same destination and on the same INCOTERMS 2020 delivery basis that the original Module causing breach of the Warranties was delivered under the purchase agreement to which this Limited Warranty applies. Replaced Modules received by Jinko pursuant to Section 5 shall be the sole property of Jinko. Jinko shall be solely responsible for all shipping costs incurred performing its additional supply, repair or replacement obligations under this Section 6. Additional or replacement Modules shall be of the same type and physical form as the original Module, electrically compatible with the original Module, and have an electrical output of not less than the warranted

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IS EXCLUSIVELY PRODUCED FOR AUSTRALIA DISTRIBUTION CHANNEL AND CAN NOT BE DUPLICATED, MODIFIED OR DISCLOSED TO THIRD PARTIES FOR ANY USE OTHER THAN THE PURPOSE FOR WHICH IT IS INTENDED FOR, WITHOUT THE PRIOR WRITTEN CONSENT OF JINKO.



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power output of the original Module at the time of supply or replacement, based on the warranted degradation rates set forth at Section 3 hereto. Notwithstanding the foregoing, if Jinko no longer supplies Modules meeting the foregoing criteria, then additional or replacement Modules provided under this Section 6 shall be those Modules then supplied by Jinko most substantially meeting the foregoing criteria. Jinko's performance of any repair, replacement or additional supply pursuant to this Section 6 shall not extend the term of any Warranties.

7. EXCLUSIONS. This Limited Warranty is subject to the exclusions set forth in this Section 7. The Warranties shall not apply to any Module which has been: (a) altered, repaired or modified without the prior written consent of Jinko or otherwise inconsistent with Jinko's written instructions; (b) removed and re-installed at any location other than the physical location in which it was originally installed following purchase by Customer or receipt from Jinko as a replacement Module; (c) subject to misuse, abuse, neglect, or accident except as may be caused by Jinko in the course of storage, transportation, handling, installation, application, use or service; (d) subject to force majeure, electrical surges, lightning, flood, fire, vandalism, tampering, accidental breakage, or other events beyond Jinko's control, resulting in material damage to the Module; (e) installed on mobile platforms (other than single- or dual-axis trackers) or in a marine environment; (f) subject to direct contact with corrosive agents or salt water; pest damage; or malfunctioning PV system components; or (g) used in a manner inconsistent with the version of Jinko Installation Manual available at www.jinkosolar.com on the date the Module is manufactured. The Warranties shall not apply to

any Module for which the labels thereon indicating type or serial number have been altered, removed or made illegible. The Warranty shall not apply to Modules for which full and final payment has not been received by Jinko.

8. NOTICE. Any notice required or permitted under this Limited Warranty shall be in writing and deemed to be properly given by the sender and received by the addressee. Mailed notices shall be addressed to the following address: +61 1300 326 182; +61 2 9893 1827, JINKO SOLAR AUSTRALIA HOLDINGS CO. PTY LTD. ATTN: Customer Care Department Level 2, 152 Marsden Street, Parramatta NSW 2150, as identified at <http://jinkosolar.com.au/customer-service/>.

Notices by e-mail should be sent to cs@jinkosolar.com. Contacts of Jinko Solar Co., Ltd. as following: Address: Jinko Building, 99 Shouyang Road, Jingan District, Shanghai, China auks@jinkosolar.com, Postcode: 200072

Tel: +86-21-51808777, Fax: +86-21-51808600, can also be located at <https://www.jinkosolar.com/contact.html?lan=en>. Customer shall promptly provide contact information upon request. For the avoidance of doubt, e-mail alone shall not constitute valid notice pursuant to this Section 8.

9. LIMITS OF LIABILITY. **NOTWITHSTANDING ANYTHING TO THE CONTRARY IN THIS LIMITED WARRANTY, EXCEPT AS EXPRESSLY PROVIDED HEREIN, JINKO MAKES NO WARRANTIES, GUARANTEES OR CONDITIONS, EXPRESS OR IMPLIED, ARISING FROM OR RELATING TO THE MODULES AND JINKO DISCLAIMS ANY WARRANTY OR GUARANTEE IMPLIED BY LAW, INCLUDING IMPLIED WARRANTIES OF PERFORMANCE, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND IMPLIED WARRANTIES OF CUSTOM OR USAGE, ARISING**



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FROM OR RELATING TO THE MODULES. THE REMEDIES FOR BREACH OF THIS WARRANTY ARE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES ARISING FROM OR RELATING TO ANY BREACH OF THE WARRANTIES. IN NO EVENT SHALL JINKO BE RESPONSIBLE PURSUANT TO THIS WARRANTY FOR ANY PERFORMANCE ANALYSIS, INSPECTION, DIAGNOSIS, REMOVAL, CUSTOMS, IMPORT DUTIES, EXPORT DUTIES, TAXES, REINSTALLATION COSTS, SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE, EXEMPLARY OR CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER, INCLUDING LOSSES OR DAMAGES CAUSED BY REASON OF LOSS OF USE, LOSS OF PROFITS OR REVENUE, INTEREST CHARGES (EXCEPT AS EXPRESSLY PROVIDED HEREIN), LOSS OF BONDING CAPACITY, COST OF CAPITAL OR CLAIMS OF CUSTOMER DAMAGES, WHETHER LIABILITY ARISES AS A RESULT OF BREACH OF CONTRACT, TORT LIABILITY (INCLUDING NEGLIGENCE), STRICT LIABILITY, BY OPERATION OF LAW OR IN ANY OTHER MANNER. EXCEPT AS SET OUT IN THIS LIMITED WARRANTY, JINKO SHALL HAVE NO RESPONSIBILITY OR LIABILITY WHATSOEVER FOR DAMAGE OR INJURY TO PERSONS OR PROPERTY, OR FOR OTHER LOSS OR INJURY RESULTING FROM ANY CAUSE WHATSOEVER ARISING OUT OF OR RELATED TO THIS LIMITED WARRANTY.

Notwithstanding the above, the following statement applies to Customers, who matches the definition of "Consumers" under the **Australian Consumer Law**: "Our goods come with guaranties that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure."

10. ASSIGNMENT. Notwithstanding anything to the contrary herein, this Limited Warranty is for the sole and exclusive benefit of Customer and there are no third party beneficiaries hereof; provided, however, subject to written notice to Jinko and Jinko's receipt of full and final payment for the Modules, this entire Limited Warranty may be assigned in whole but not in part to any person or entity. Any permitted assignee of this Limited Warranty shall execute such agreements as may reasonably be requested by Jinko to confirm the applicability of any term hereof as a condition to assignment.

11. LAW AND FORUM. Any dispute related to or arising out of this Limited Warranty, including without limitation any question regarding its existence, validity, breach, or termination, shall be referred to and finally resolved pursuant to the governing law clauses and dispute resolution procedures under the purchase agreement between the original purchaser and Jinko. As a condition to any obligation of Jinko hereunder, Jinko may require any Customer seeking to enforce this Limited Warranty to execute such additional agreements as may reasonably be required to enforce the terms of this Section 11.

12. MERGER CLAUSE. This Limited Warranty sets forth the entire agreement and understanding of the Parties relating to the subject matter herein and supersedes all prior or contemporaneous discussions, understandings and agreements, whether oral or written, between them relating to the subject matter hereof.

13. SEVERABILITY. If one or more provisions of this Limited Warranty are held to be unenforceable under applicable law, the Parties agree to renegotiate such provision in good faith.



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In the event that the parties cannot reach a mutually agreeable and enforceable replacement for such provision, then (a) such provision shall be excluded from this Limited Warranty, (b) the balance of this Limited Warranty shall be interpreted as if such provision were so excluded and (c) the balance of this Limited Warranty shall be enforceable in accordance with its terms.

14. MISCELLANEOUS. The terms of this Limited Warranty are conditioned upon their incorporation in a contractual agreement between Jinko and Customer, and when incorporated to such contractual agreement, this Limited Warranty shall be subject to the terms thereof and subject to modification when incorporated therein. Jinko reserves the right to modify or update this Limited Warranty at any time, with or without notice.

[END OF LIMITED WARRANTY]

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48QL6-DV

460-485 Watt

MONO-FACIAL MODULE
WITH DUAL GLASS



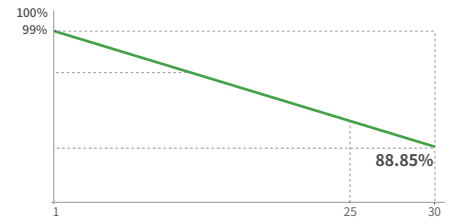
Higher Power on Front Side

Leading power class based on the enhanced N-type TOPCon platform, achieved through cutting-edge technology and an optimized layout that captures more sunlight.



Optimized Heat resistance

Optimized temperature coefficient achieved via advanced graphical patterning, busbar and multi-cell technology.



Proven Low Light Performance

Enhanced cell structure ensures superior module performance under low-light conditions.



Industry Leading Warranty

Advanced metallization and iterated module encapsulation deliver superior resistance to PID, LID / LeTID, and UV degradation.

25 Year Product Warranty	30 Year Linear Power Warranty	1% First-year Degradation	0.35% Annual Degradation Over 30 Years
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- IEC61215:2021 / IEC61730:2023
- IEC61701 / IEC62716 / IEC60068 / IEC62804
- ISO9001:2015: Quality Management System
- ISO14001:2015: Environment Management System
- ISO45001:2018: Occupational health and safety management systems



Mechanical Load Enhanced

Certified to withstand:
5400 Pa front side max static test load
2400 Pa rear side max static test load



POSITIVE QUALITY™
Continuous Quality Assurance

JKM460-485N-48QL6-DV-F2-OC

48QL6-DV 460-485 Watt

Mechanical Characteristics

Cell Type	N- type Mono-crystalline
No. of cells	192 (48×4)
Dimensions	1762×1134×30 mm
Weight	21.5 kg
Front Glass	1.6 mm, Anti-reflection Coating
Back Glass	1.6 mm, Heat Strengthened Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Protection Class	Class II
IEC Fire Type	Class C
Connector Type	PV-JK03M/xy,PV-JK03M2/xy (JinKO) ; PV-KST4-EVO2A/xy,PV-KBT4-EVO2A/xy (Staubli)
Output Cables (Including Connector)	≥4.0 mm ² (+): 600 mm , (-): 400 mm or Customized Length

* MC4-EVO2 available upon request and subject to availability

Packaging Configuration

Pallet Dimensions	1792×1140×1249 mm
Packing Detail (Two pallets = One stack)	37 pcs/pallets, 74 pcs/stack, 962 pcs/ 40'HQ Container

Specifications (STC)

Maximum Power - Pmax [Wp]	460	465	470	475	480	485
Maximum Power Voltage - Vmp [V]	30.57	30.74	30.93	31.11	31.30	31.48
Maximum Power Current - Imp [A]	15.05	15.13	15.20	15.27	15.34	15.41
Open-circuit Voltage - Voc [V]	35.67	35.92	36.17	36.42	36.67	36.92
Short-circuit Current - Isc [A]	15.72	15.77	15.82	15.86	15.90	15.95
Module Efficiency STC [%]	23.02	23.27	23.52	23.77	24.02	24.27
Power Measurement Tolerance	0 ~ +3 %					
Power Sorting	-5W ~ +15W					
Temperature Coefficient of Pmax	-0.26 %/°C					
Temperature Coefficient of Voc	-0.24 %/°C					
Temperature Coefficient of Isc	0.046 %/°C					

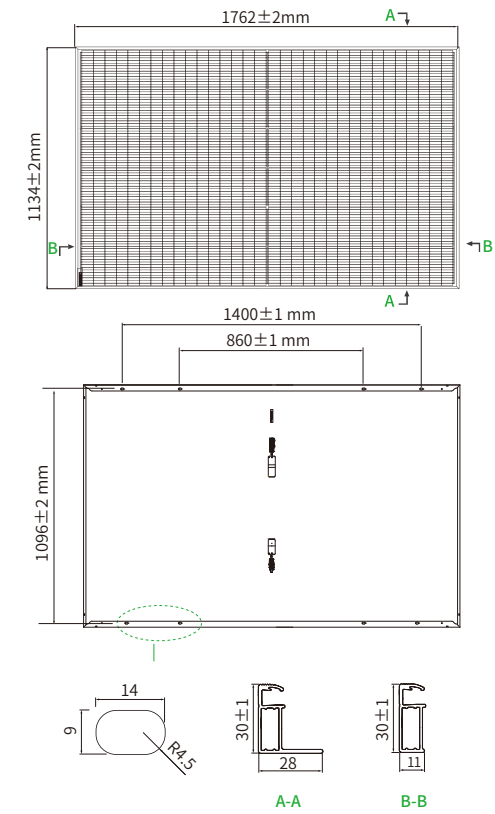
STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5

Application Conditions

Level T _g ≤ 70 °C	- 40 °C to + 70 °C*
Maximum System Voltage	1500 VDC (IEC)
Maximum Series Fuse Rating	30 A

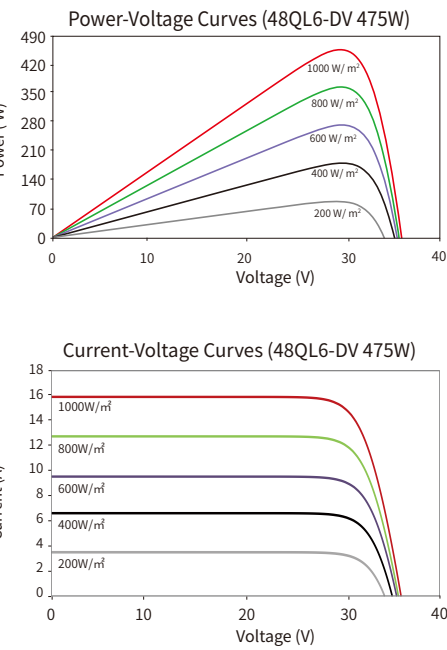
*Short-term up to 85°C; higher operation requires IEC TS 63126 testing

Engineering Drawings



*Note: For specific dimensions and tolerance ranges, please refer to the corresponding detailed module drawings.

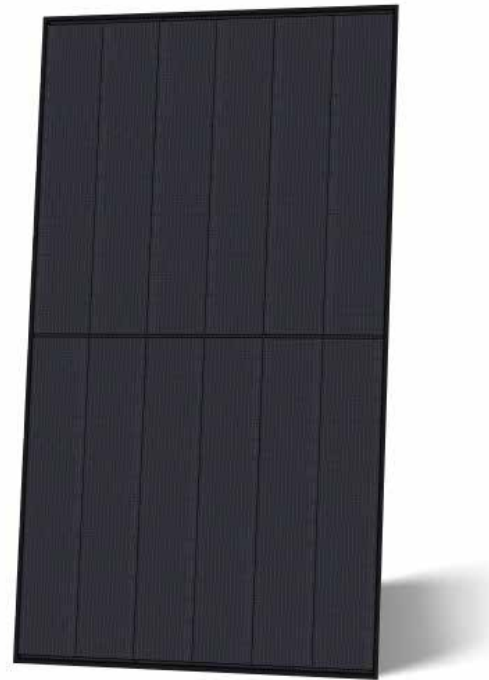
Electrical Performance



48QL6-DB

460-485 Watt

ALL BLACK MONO-FACIAL MODULE
WITH DUAL GLASS



Higher Power on Front Side

Leading power class based on the enhanced N-type TOPCon platform, achieved through cutting-edge technology and an optimized layout that captures more sunlight.



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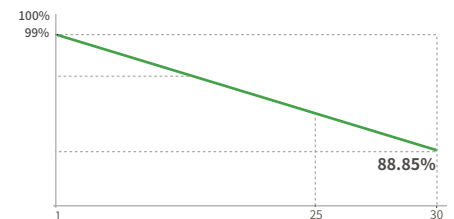
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5400 Pa front side max static test load
2400 Pa rear side max static test load



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JKM460-485N-48QL6-DB-F2-OC

48QL6-DB 460-485 Watt

Mechanical Characteristics

Cell Type	N- type Mono-crystalline
No. of cells	192 (48×4)
Dimensions	1762×1134×30 mm
Weight	21.5 kg
Front Glass	1.6 mm, Anti-reflection Coating
Back Glass	1.6 mm, Heat Strengthened Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Protection Class	Class II
IEC Fire Type	Class C
Connector Type	PV-JK03M/xy,PV-03M2/xy (Jinko) ; PV-KST4-EVO2A/xy,PV-KBT4-EVO2A/xy (Staubli)
Output Cables (Including Connector)	≥4.0 mm ² (+): 600 mm , (-): 400 mm or Customized Length

* MC4-EVO2 available upon request and subject to availability

Packaging Configuration

Pallet Dimensions	1792×1140×1249 mm
Packing Detail (Two pallets = One stack)	37 pcs/pallets, 74 pcs/stack, 962 pcs/ 40'HQ Container

Specifications (STC)

Maximum Power - P _{max} [Wp]	460	465	470	475	480	485
Maximum Power Voltage - V _{mp} [V]	30.63	30.80	30.97	31.13	31.32	31.50
Maximum Power Current - I _{mp} [A]	15.02	15.10	15.18	15.26	15.33	15.40
Open-circuit Voltage - V _{oc} [V]	35.69	35.94	36.19	36.44	36.69	36.94
Short-circuit Current - I _{sc} [A]	15.70	15.75	15.80	15.85	15.89	15.94
Module Efficiency STC [%]	23.02	23.27	23.52	23.77	24.02	24.27
Power Measurement Tolerance	± 3%					
Power Sorting	-5W ~ +15W					
Temperature Coefficient of P _{max}	-0.26 %/°C					
Temperature Coefficient of V _{oc}	-0.24 %/°C					
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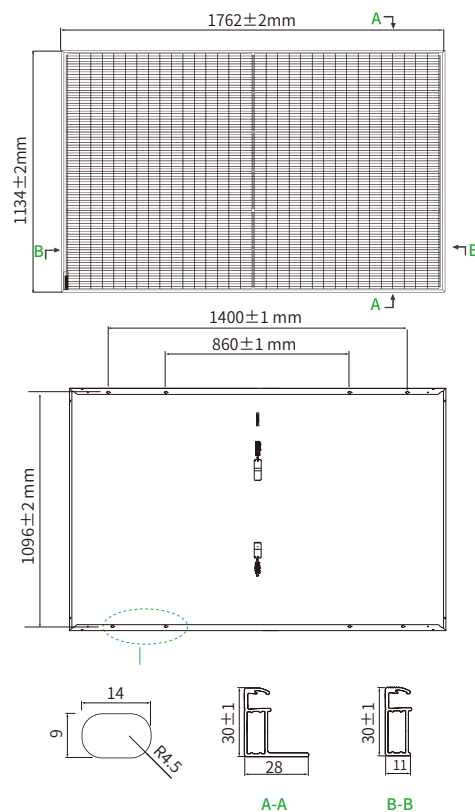
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Application Conditions

Level T _{gs} ≤ 70 °C	- 40 °C to + 70 °C*
Maximum System Voltage	1500 VDC (IEC)
Maximum Series Fuse Rating	30 A

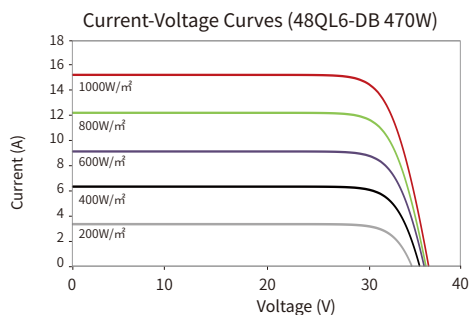
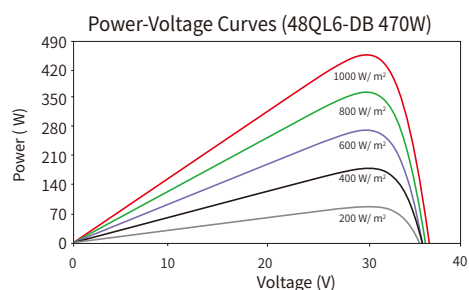
*Short-term up to 85°C; higher operation requires IEC TS 63126 testing

Engineering Drawings



*Note: For specific dimensions and tolerance ranges, please refer to the corresponding detailed module drawings.

Electrical Performance





Product Service

CERTIFICATE

No. Z2 118443 0038 Rev. 02

Holder of Certificate: **Jinko Solar Co., Ltd.**
No.1, Yingbin Road, Economic Development Zone
334100 Shangrao City, Jiangxi
PEOPLE'S REPUBLIC OF CHINA

Certification Mark:



Product: **Crystalline Silicon Terrestrial Photovoltaic (PV) Modules**
Mono-Crystalline Silicon Photovoltaic Module

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition, the certification holder must not transfer the certificate to third parties. This certificate is valid until the listed date, unless it is cancelled earlier. All applicable requirements of the Testing, Certification, Validation and Verification Regulations of TÜV SÜD Group have to be complied. For details see: www.tuvsud.com/ps-cert

Test report no.: 704062307436-02

Valid until: 2029-03-13

Date, 2024-03-15

(Zhulin Zhang)

CERTIFICATE

No. Z2 118443 0038 Rev. 02

Model(s):

1500VDC system voltage:

JKMxxxM-72HL4-TV (xxx=540, in steps of 5)
 JKMxxxM-72HL4-V, JKMxxxM-72HL4-V-J (xxx=540-570, in steps of 5)
 JKMxxxM-54HL4-V (xxx=405-425, in steps of 5)
 JKMxxxN-78HL4-V, JKMxxxN-78HL4-V-J (xxx=605-650, in steps of 5)
 JKMxxxN-72HL4-V, JKMxxxN-72HL4-V-J, JKBWxxxN-72HL4-V
 (xxx=560-600, in steps of 5)
 JKMxxxN-60HL4-V, JKMxxxN-60HL4-V-J (xxx=470-500, in steps of 5)
 JKMxxxN-54HL4-V, JKMxxxN-54HL4R-V (xxx=420-450, in steps of 5)
 JKMxxxN-66HL4M-V (xxx=600-620, in steps of 5)

1000VDC system voltage:

JKMxxxM-72HL4, JKMxxxM-72HL4-J (xxx=540-570, in steps of 5)
 JKMxxxM-54HL4 (xxx=405-425, in steps of 5)
 JKMxxxN-78HL4, JKMxxxN-78HL4-J (xxx=605-650, in steps of 5)
 JKMxxxN-72HL4, JKMxxxN-72HL4-J, JKBWxxxN-72HL4
 (xxx=560-600, in steps of 5)
 JKMxxxN-60HL4, JKMxxxN-60HL4-J (xxx=470-500, in steps of 5)
 JKMxxxN-54HL4, JKMxxxN-54HL4R (xxx=420-450, in steps of 5)
 JKMxxxN-66HL4M (xxx=600-620, in steps of 5)

xxx is standing for rated output power at STC

Parameters:

Fire Safety Class:	Class C according to UL790
Safety Class:	Class II
Max. System Voltage:	1500V DC or 1000V DC
Construction:	Framed with Junction box, cable and connector.

Production

Facility(ies):

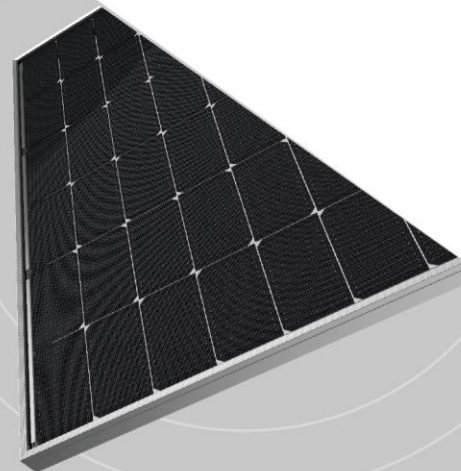
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 115860, 118443, 122742, 118612, 119487, 115859.

Tested according to:

IEC 61215-1:2021
 IEC 61215-1-1:2021
 IEC 61215-2:2021
 IEC 61730-1:2023
 IEC 61730-2:2023
 EN 61215-1:2021
 EN 61215-1-1:2021
 EN 61215-2:2021
 EN IEC 61730-1:2018
 EN IEC 61730-1:2018/AC:2018-06
 EN IEC 61730-2:2018
 EN IEC 61730-2:2018/AC:2018-06

Jinko Solar

**Installation manual for
Photovoltaic Module**



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1. General Information

1.1 Overview

Thanks for choosing Jinko Solar PV modules (hereafter referred to as “modules”). In order to ensure that the PV modules are installed correctly, please read the following instructions carefully before installing and using the modules.

Please remember that PV modules generate electricity and that certain safety measures must be taken to avoid danger.

The protection class of modules: Class II (IEC61730:2023); (IEC61730:2016).

The application class of modules: Class A (IEC61730:2004).

Fire safety class: Class C according to UL790.

1.2 Warnings



Precautions:

- Modules generate DC electrical energy when exposed to sunlight or other light sources. Improper contact with live parts of the module such as terminals can result in burns, sparks, and lethal shock.
- Front glass is used for module protection. Broken glass can cause electrical safety hazard (may cause electric shock or fire). These modules cannot be repaired and must be removed and replaced immediately.
- Breakage of the rear glass (in the case of bifacial PV modules) can also lead to the issue of electrical safety. As in the case of monofacial modules, this cannot be repaired and the modules must be disconnected and replaced immediately.
- The table of specifications is measured under standard test conditions (Irradiance 1000W/m², module cell temperature 25°C, air mass=1.5). The current and voltage generated by modules in different environments are different from those listed in the specification table. Therefore, when determining the specifications of the rated voltage, cable capacity, fuse capacity, controller capacity, and other output power related specifications, take the values of 1.25 times the short-circuit current and open-circuit voltage marked on the module as reference, and consult with your inverter/controller supplier for the system configuration design.
- During all deliveries, ensure that the modules are not subject to big shocks during transportation, which may damage the assembly or cause cracks in the cell of modules.
- When the electrical load is working, do not disconnect modules without authorization; if disconnecting the connector is needed, the DC and AC inverters must be turned off first or the main switch of the converter must be cut off.

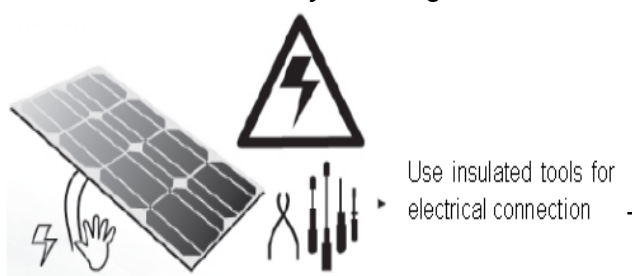
- When the battery storage system is connected with the PV system, the battery must be installed correctly, so as to protect the operation of the system and ensure the user safety; Follow the battery manufacturer's instructions for installation, operation, and maintenance.

Prohibitions:

- Do not apply excessive force or objects on the surface of the module, do not impact, and do not twist the frame of the module, which may damage the cells or cause the cells to crack.
- Do not use the module to replace or partly replace roofs and walls of buildings.
- Do not remove any part installed by Jinko Solar or disassemble the module.
- Don't lift up the modules using the attached cables or the junction box.
- Modules (glass, junction boxes, connectors, etc.) shall be protected from long-term exposure to environments containing sulfur, acid, alkaline, etc., which may pose a risk of corrosion to the product, and organic solvents which can destroy anti-reflection (AR) coating on the front glass or have a negative impact on the polymers as junction boxes and backsheets.
- The junction box must meet IP68 (IEC60529) requirement, however it must be protected from direct sunlight and water immersion. The interconnection of female-male connectors shall meet the IP68 (IEC60529) requirements. However, it is not allowed to use the connector under water for a long time.
- The junction box and the connector shall not be in contact with oily substances, organic solvents and other corrosive materials that may cause functional failure, i.e., alcohol, gasoline, lubricants, rust inhibitors, herbicides, to avoid damage to the junction box and the connector. If the junction box and connector are contaminated, they are forbidden to use.
- Do not stand or step on the module like shown in the below pictures. This is prohibited and there is a risk of damaging the module and injuring the user.



- Do not touch live terminals with bare hands. Use insulated tools for electrical connections.
- Artificially concentrated sunlight shall not be directed onto the module. Do not expose the back of the monofacial module directly to sunlight.



Others:

- The maximum altitude of module installation is 2000m.
- The minimum distance from the seashore is 50m (for more info, please refer to 2.2.2). If the distance is less than 50m, we recommend using offshore photovoltaic modules. Please consult JinkoSolar for details.
- When looking at PV modules with anti-reflection (AR) coating technology, it will be normal to see module with a slight color difference at different angles.
- Before the installation of modules, the modules shall be kept under rainproof facility to avoid direct exposure to rain and sunlight.
- Meaning of crossed –out wheeled dustbin:

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

Contact your local government for information regarding the collection systems available.

If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.

When replacing old appliances with new ones, the retailer is legally obligated to take back your old appliance for disposals at least free of charge.



For more, please contact Jinko or refer to the operation and maintenance guideline.

2. Installation

2.1 Installation Safety

- Always wear safety helmet, insulated gloves, insulated rubber shoes, and other protective measures during installation.
- When installing or maintaining the PV system, please do not wear metal rings, watches and other metal products, so as not to cause electric shock danger and damage the modules.
- Keep the module unpacked until installation. Once the modules are removed from the pallet, they shall be installed and connected to the inverter. If they are not installed immediately, protective measures (such as adding rubber joint cover, etc.) shall be taken on the connection head.
- Do not touch the PV module with bare hands during installation unless necessary. The glass surface

and the frame may be hot. There is a risk of burns and electric shock. Use the standard safety tools and equipment when installing the modules.

- Do not work in rain, snow or windy conditions.
- Due to the risk of electrical shock, do not perform any work if the terminals of the module are wet.
- Use insulated tools and do not use wet tools.
- Only the modules of the same size and the specifications within same range can be connected in series.
- Connect the male and female connectors correctly, check the wiring condition, all wires shall not be detached from the modules, and secure the wires with cable ties so that the wires do not scratch or squeeze the backsheets of the modules.
- Do not touch the junction box or the connectors with bare hands during installation or under sunlight, regardless if the module is connected to or disconnected from the system.
- Do not drill holes in the frame without authorization from Jinko, which may cause corrosion or other negative effects to the module.
- Thermal expansion and cold contraction effect occur on the modules. During installation, the interval between two adjacent modules must be $\geq 10\text{mm}$. If there are special requirements, please confirm with Jinko before installation.
- During the installation, as for module removal, maintenance and any other related processes, it is recommended that the force applied between the cable and the connector, and the cable and the junction box to be no more than 60N.
- Do not install the modules anywhere close to open flames or exposed flammable and explosive gases.

2.2 Installation Condition

2.2.1 Climate Condition

The recommended weather conditions for installing modules are:

- a) Humidity: $< 85\% \text{ RH}$
- b) Ambient air temperature range: -40°C to $+ 40^{\circ}\text{C}$
- c) Operating temperature: -40°C to $+ 70^{\circ}\text{C}$

2.2.2 Site Selection

In most applications, Jinko solar PV modules should be installed in a location where they can receive maximum sunlight throughout the year. In the Northern Hemisphere, the module should typically face south, and in the Southern Hemisphere, the modules should typically face north. Modules facing 30

degrees away from due South (or due North) will lose approximately 10 to 15 percent of their power output. If the module faces 60 degrees away from due South (or due North), the power loss will be 20 to 30 percent. Refer to the longitude and latitude of the location to determine the optimal azimuth of the module.

When choosing a site, avoid trees, buildings or obstructions that could create shadows on the modules. Shading causes loss of power output, even though bypass diodes have been installed for the module, shading will affect the optimum performance and safety issue of the PV modules. Operation in permanent shading conditions is not recommended.

Do not install the PV module near open flame or flammable materials.

Do not install the PV module in a location where it would be immersed in water or continually exposed to water from a sprinkler or fountain etc.

JinkoSolar PV modules have passed the IEC 61701 salt spray corrosion test (test method 6). PV modules can be installed at a distance of 50m away from the seashore. In the case when the modules are installed within 50m to 500m distance from the seashore, the connectors shall be protected, i.e., adding dust plugs. After removing the dust plugs, connect the connectors immediately and take other anti-rust measures to prevent rust.

For roof-top installations, the roof must be covered with at least one layer of fireproof material suitable for the fireproof class of the PV modules. To facilitate ventilation and heat dissipation of the module, the minimum distance between modules and roof must be ≥ 10 cm. Walkways should be reserved for cleaning, repairment and maintenance. For roof-top PV systems, please follow the safety principles of "from top to bottom" and "from left to right". Please use appropriate module components to comply with local laws and regulations, as well as the building fire safety requirements before installation, such as fuses, circuit breakers and grounding connectors, etc...

It is possible that modules installed with restricted airflow are not allowed for use in some hot locations, depending on system design parameters. Installers should assess if the system design at a specific geographic location will result in a 98th percentile module operating temperature greater than 70 °C, and must consider these factors in design of systems.

2.2.3 Tilt Angle Selection

The tilt angle of the PV module is measured between the surface of the PV module and a horizontal ground surface (Figure 1). The module generates maximum output power when directly facing the sun.

For standalone systems, the tilt angle of the modules should be selected to optimize the performance based on the season and sunlight. In general, if the module output is adequate when the irradiance is low (i.e., winter), the angle chosen should be adequate during the rest of the year.

For grid-connected systems, modules should be tilted at the angle that the energy production from the modules will be maximized on an annual basis. The Fire Class Rating of a module for roof mounted system shall meet local code requirements in order to achieve the specified System Fire Class Rating for a non-BIPV module.

All PV systems have limitations of inclination required to maintain a specific System Fire Class Rating.

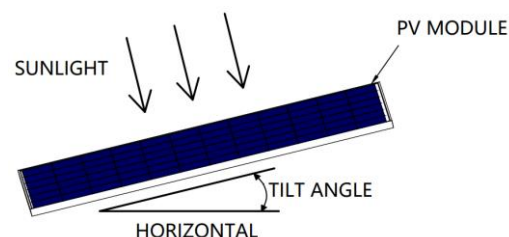


Fig. 1 PV module tilt angle

2.3 Mechanical Installation

Modules can usually be mounted by using the following methods: fixed installation-mounting with bolts, fixed installation-mounting with clamps and tracker installation.

*** Note:**

- 1) All installation methods herein are only for reference, and they are based on the test results from third-party tests and Jinko internal tests;
- 2) Jinko solar will not provide related mounting accessories, the system installer or trained professional personnel must be responsible for the PV system's design, installation, and mechanical load calculation and system security;
- 3) Before installation, the following items shall be addressed:
 - a) Visually check the module for any damage. Clean the module if any dirt or residue remains;
 - b) Check if module serial number stickers match.
- 4) The maximum loads that different types of modules can withstand on the front side and back side are dependent on installation methods, which can be referred to Table 2, Table 3 and Table 5. If there is heavy snow and strong wind on the module installation site, take special protection to meet the actual requirements;

Note: Maximum Test Load = 1.5 (Safety factor) x Design load

- 5) The module must be mounted on the bracket according to the following installation. If there are other

installation, please consult JinkoSolar and obtain approval, otherwise the warranty will be invalid;

- 6) Under the mounting method of the fixed bracket as specified in this manual, the modules will be concave to varying degrees due to the gravity, which is a normal physical phenomenon and does not affect the normal use and performance of the modules. Any other external forces will cause additional sinking of the modules, so any operation of the modules should comply with this manual.

2.3.1 Fixed installation-mounting with bolts

Install the module on the rack using anti-corrosion bolts, elastic washers and flat washers with sufficient torque to allow the module to be properly secured. The reference value of tightening torque for M8 bolt is 16-20 N*M, and for M6 bolt is 9-12 N*M. If special mounting system or special installation method is required, please reconfirm with the supplier of the racking system regarding the torque value. See Figure 2 for detailed installation information.

See Figure 3 for the module models with corresponding installation positions for bolt installation (using 4 inner holes), Figure 4 for the module models with corresponding installation positions for bolt installation (using 4 outer holes) and Table 1 lists different sizes of bolts for different mounting holes.

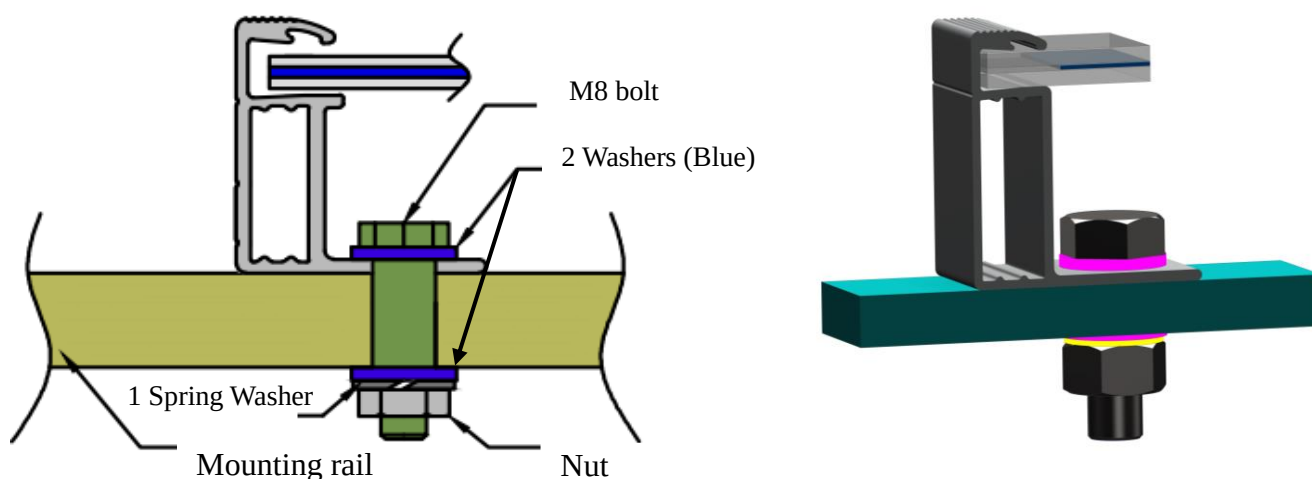


Fig. 2 Mounting with bolts

Mounting hole (mm)	Recommended bolt size
14 x 9	M8
10 x 7	M6

Table 1 Bolts for different mounting holes

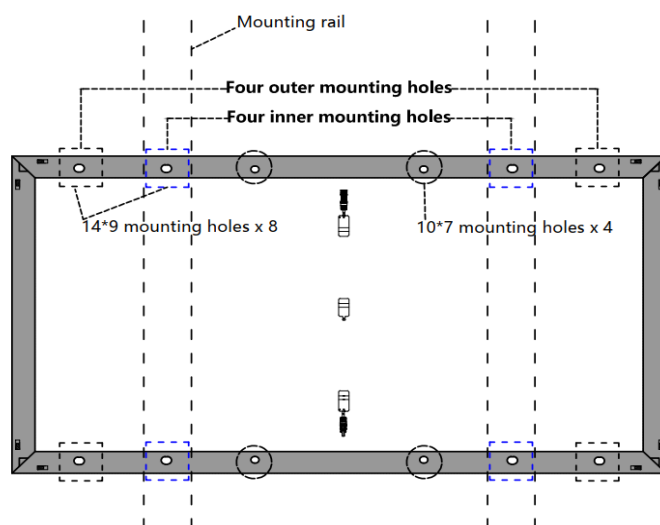


Fig. 3 Installation with bolt (Four inner mounting holes)

Module type	Bolt installation (Test Load Pa)
	Four inner mounting holes
JKMxxxN-54HL4-(V) JKMxxxN-54HL4-B JKMxxxN-54HL4R-(V) JKMxxxN-54HL4R-B JKMxxxN-54HL4R-BDV JKMxxxN-54HL4R-BDB JKMxxxN-72HL4-BDX	+6000/-4000
JKMxxxN-78HL4-(V) JKMxxxN-78HL4-BDV JKMxxxN-72HL4-(V) JKMxxxN-72HL4-(V)-L JKMxxxN-72HL4-BDV JKMxxxN-60HL4-(V) JKMxxxN-60HL4R-(V) JKMxxxN-6RL3-(V) JKMxxxN-6RL3-B JKMxxxN-6TL3-(V) JKMxxxN-6TL3-B JKMxxxM-72HL4-BDVP JKMxxxM-72HL4-(V) JKMxxxM-72HL4-TV JKMxxxM-60HL4-(V) JKMxxxM-54HL4-(V) JKMxxxM-7RL3-(V)	+5400/-2400

Table 2 Test loads under four inner bolt installation methods for different module types

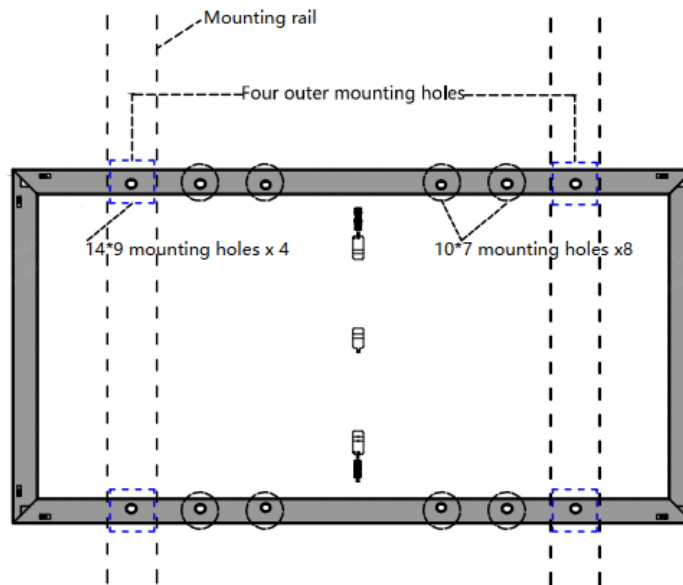


Fig. 4 Installation with bolt (Four outer mounting holes)

Module type	Bolt installation (Test Load Pa)
	Four outer mounting holes
JKMxxxN-66HL4M-BDV JKMxxxN-66HL4M-V	+5400/-2400

Table 3 Test loads under four outer bolt installation methods for different module types

2.3.2 Fixed installation-mounting with clamps

The clamps must not be installed in contact with the front glass of the module and must not deform the module frame. Ensure that the clamps do not create a shadow on the module. Under no circumstances may the frame be altered. When choosing the mounting method for the clamps, make sure that there are at least four clamps on each module. The different mounting positions of the clamps determine the maximum load capacity of the module. Figures 7 - 11 show the different mounting methods and the positions of the clamps for the different mounting methods. Depending on the local wind and snow loads, if there is a possibility of excessive load combinations, additional clamps are required to ensure that the module has enough load carrying capacity. The torque value applied during installation of the clamps should be high enough to securely hold the module (consult installer or bracket supplier for exact torque value). Clamp dimensions and contact area must follow the values shown in Table 4. As shown in Fig.5, the length and width of the module are represented by a and b . The minimum length of a is 50mm, and the minimum width of d that is the contact width between clamp and frame is 10mm, and minimum thickness of clamp is 3mm. The distance between the installation position of the long-side clamp and the edge is represented by L in Fig.7 and Fig.11. The distance between the installation position of the short-side clamp and the edge is represented by S in Fig.8 – Fig.11.

length of the clamp	$\geq 50\text{mm}$
Overlap of the frame of the module	$\geq 10\text{mm}$
thicknesses	$\geq 3.0\text{mm}$

Table 4 Size of clamp

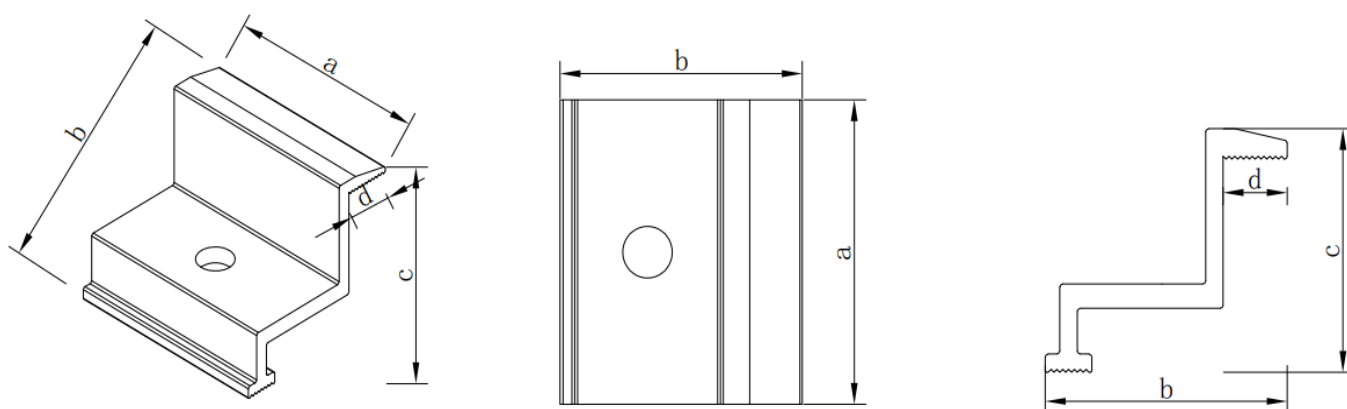


Fig. 5 Clamp

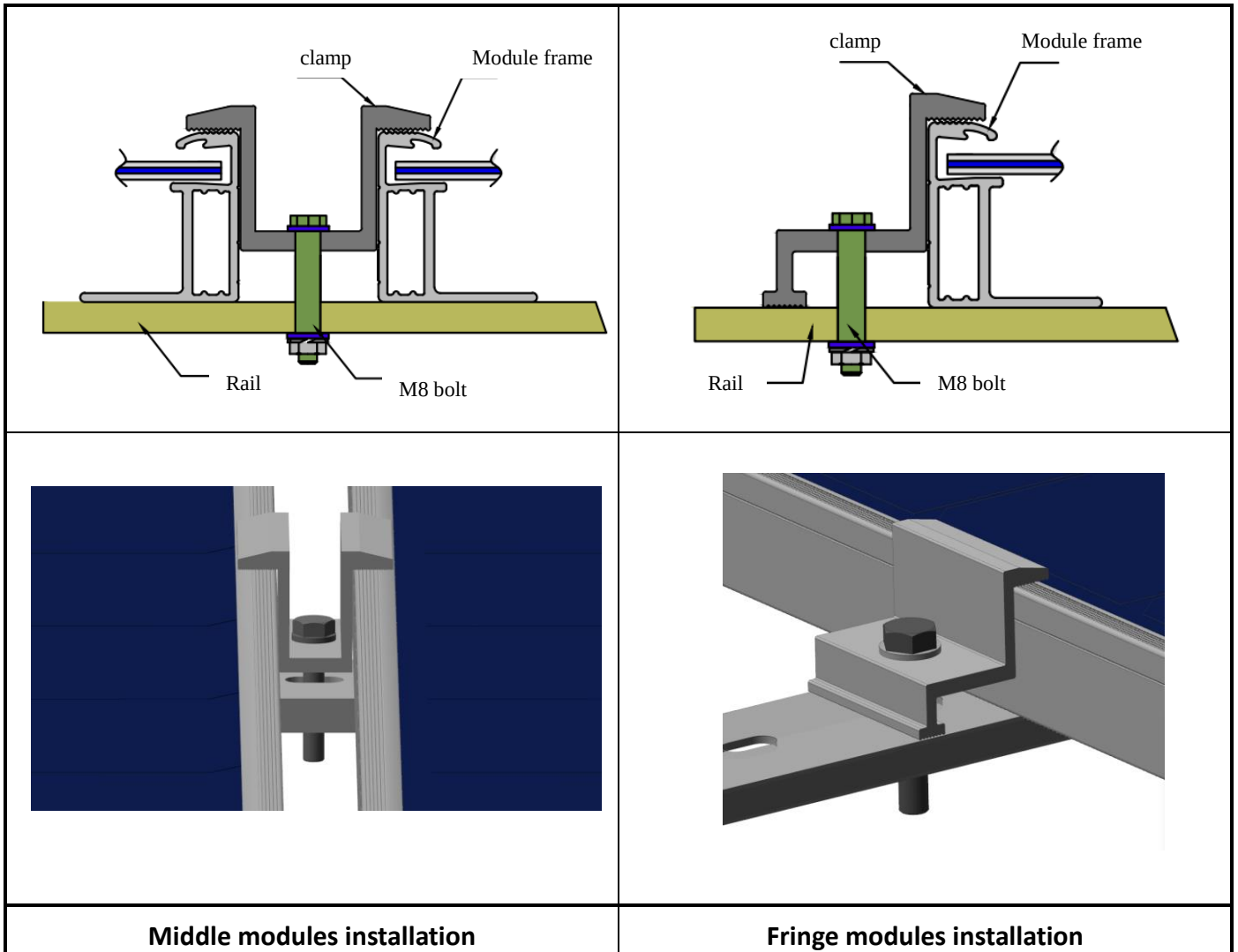


Fig. 6 PV module installed at the side with Clamp mounting

2.3.2.1 Different methods of clamp installation

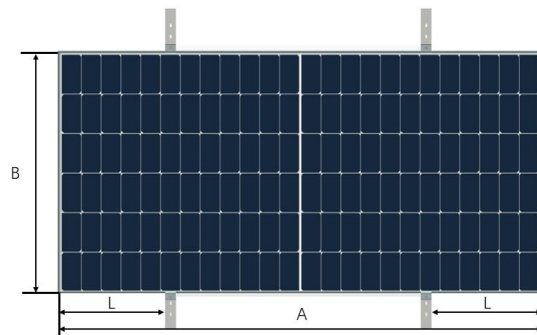


Fig. 7

Long side clamp installation

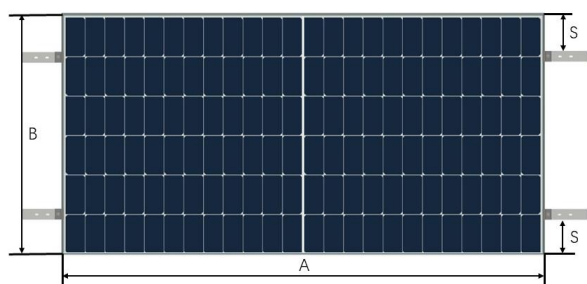


Fig. 8

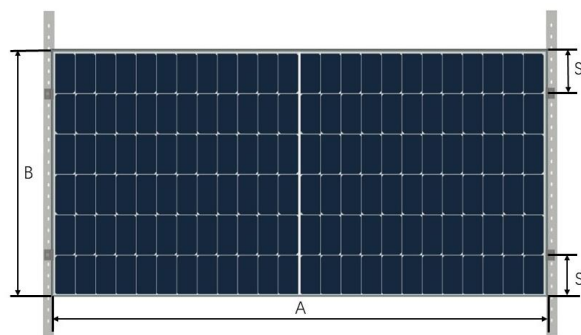


Fig. 9

Short side clamp installation

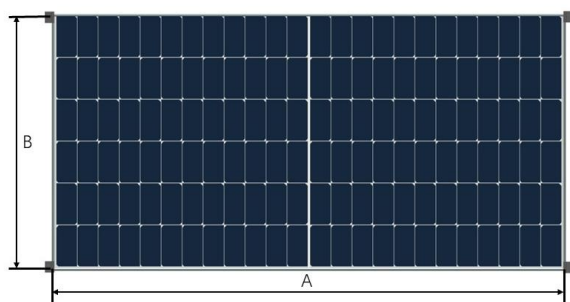


Fig. 10

Corner clamp installation($S=0$)

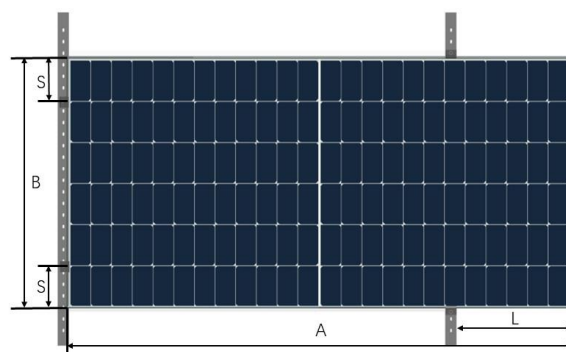


Fig. 11

Long & short side clamp installation

Table 5 Clamp Installation

2.3.2.2 Mechanical loads for different clamp installation

The installation position under different installation methods for different module types	Clamp installation on long side (+5400Pa/ – 2400Pa) L in Fig. 7		Clamp installation on short side (±1600Pa) S in Fig. 8, 9	Corner clamping (±1600Pa) Fig. 10	Long & short side clamp installation (±2400Pa) Fig. 11
Frame height	30	35	30	30	30
JKMxxxM-54HL4-(V)	A/5±50mm	/	100~240	S=0	S=100~240 L=A/5±50mm
JKMxxxN-54HL4R-BDB	A/5±50mm (+6000Pa/ -4000Pa)		/	/	/
JKMxxxN-54HL4-(V)			100~240	S=0	S=100~240 L=A/5±50mm
JKMxxxN-54HL4-B					
JKMxxxN-54HL4R-(V)					
JKMxxxN-54HL4R-B					
JKMxxxN-54HL4R-BDV					
JKMxxxN-60HL4-(V)	A/5±50mm	/	100~240	S=0	S=100~240 L=A/5±50mm
JKMxxxN-60HL4R-(V)					
JKMxxxM-60HL4-(V)					
JKMxxxN-6TL3-(V)	A/4±50mm	/	100~240	S=0	/
JKMxxxN-6TL3-B					
JKMxxxN-6RL3-(V)	A/5±50mm	/	130~240	/	S=130~240 L=A/5±50mm
JKMxxxN-6RL3-B					
JKMxxxN-72HL4-(V)-L	A/5~A/4	/	/	/	/
JKMxxxN-72HL4-(V)		A/5±50mm			
JKMxxxM-72HL4-(V)					
JKMxxxM-72HL4-TV					
JKMxxxM-7RL3-(V)	/	A/5±50mm	/	/	/
JKMxxxN-78HL4-(V)	/	A/5~A/4	/	/	/
JKMxxxN-72HL4-BDV	A/4±50mm	/	/	/	/
JKMxxxM-72HL4-BDVP					
JKMxxxN-72HL4-BDX	A/4±50mm (+6000Pa/ -4000Pa)	/	/	/	/
JKMxxxN-78HL4-BDV	A/4±50mm	/	/	/	/
JKMxxxN-66HL4M-BDV	A/5~A/4	/	/	/	/
JKMxxxN-66HL4M-V	/	A/5~A/4	/	/	/
Note	A is the length of the long side of the module, B is the length of the short side. For details, please refer to Datasheet.				

Table 6 Installation dimensions of different module types for clamp mounting

(Note: for the maximum loads that do not appear in Table 5 for certain installation methods, and for the other installation methods that doesn't appear in Table 6, please contact Jinko for more details.)

2.3.3 Tracker installation

Jinko modules also have high compatibility with various mainstream tracker systems in the industry. The maximum load that Jinko module can achieve is as listed in Table 7. (For detailed installation drawings and installation method, please refer to installation manual of tracker supplier. For other tracker systems that are not listed in the table, please contact Jinko customer service department for more information.)

Module type	Tracker system	Installation	Test load (Pa)
JKMxxxN-54HL4-(B)-(V)	ATI 1P	Through bolt clamp 1300/1400mm	+4100/-3200
JKMxxxM-7RL3-(V)	ATI 1P	Hi-rise clamp 400mm	±2100
		Through bolt clamp 1300/1400mm	±3600
JKMxxxM-7RL3-(V)	NEXTracker 1P	400mm hole distance	±2400
JKMxxxM-7RL3-BDVP			
JKMxxxM-72HL4-TV			
JKMxxxN-72HL4-(V)			
JKMxxxN-72HL4-(V)	PVH MNL+2P MNL2V	Long rail 80x3845x1.5, Hole spacing 1086mm Length fixation 1400mm	+2600/-1600
	PVH AXDUO MNL+1P	Short rail 60x428x1 Hole spacing 1086mm Length fixation 400mm	±1800
		Long rail 60x1128x1.5 Hole spacing 1086mm Length fixation 1100mm	±2400
	NEXTracker 1P	400mm hole distance	±2400
JKMxxxN-78HL4-(V)	NEXTracker 1P	400mm hole distance	±1800
JKMxxxM-72HL4-BDVP JKMxxxN-72HL4-BDV	NEXTracker 1P	400mm hole distance	±2400
	PVH AXDUO MNL+1P	Short rail 60x428x1 Hole spacing 1096mm Length fixation 400mm	±1800
		Long rail 60x1128x1.5 Hole spacing 1096mm	+2600/-2400

		Length fixation1100mm	
	PVH MNL+2P MNL2V	Long rail 80x3845x1.5 Hole spacing 1096mm Length fixation 1400mm	+2600/-1600
	ATI V3	Hi-rise clamp 300mm	±1200
		Hi-rise clamp 400mm	+1500/-1400
		Through bolt clamp 1300mm bolting at 1100mm position only	±2400
		Through bolt clamp 1400mm bolting at 400mm and 1400mm positions	±3300
JKMxxxN-78HL4-BDV	NEXTracker 1P	400mmhole distance	±1800
	PVH AXDUO MNL+1P	Short rail 60x428x1 Hole spacing 1096mm Length fixation 400mm	±1800
	PVH AXDUO MNL+1P	Long rail 60x1228x1.5 Hole spacing 1096mm Length fixation 1200mm	+2165/-2400
	ATI V3	Hi-rise clamp 300mm	±1200
	ATI V3	Hi-rise clamp 400mm	±1200

Table 7 Test loads under tracker installation methods for different module types

3. Wiring and Connection

- When installing and connecting modules, the foam tube must be removed first, Jinko will not guarantee the safety of products and the consistency of technical parameters if the connecting heads and tools used are not officially specified by Jinko or are not installed according to the official requirements;
- PV modules connected in series shall have similar current, (please contact Jinko if there is any concern), and modules must not be connected together to create a voltage higher than the permitted system voltage. The maximum number of modules in series depends on system design and the rating of the inverter used;
- The maximum fuse rating value in an array string can be found on product label or product datasheet. The fuse rating value is also corresponding to the maximum reverse current that a module can

withstand, for example, when one string is in shade then the other parallel strings of modules will be loaded by the shaded string and the current will pass through to create a current circuit. Based on the maximum series fuse rating of module and local electrical codes and standards, make sure the modules strings in parallel are protected with the appropriate in-line string fuse;

- d) Open the combiner box of the control system and connect the conductor from the PV arrays to the combiner box in accordance with the design and local codes and standards. The cross-sectional area and cable connector capacity must satisfy the maximum short-circuit of the PV system (for a single module, it is recommended that the cross-sectional area of cables be 4mm^2 and certified to IEC 62930 type 131), otherwise cables and connectors will become overheating for large current. Please pay attention that the temperature limit of cables is 90°C ;
- e) The module frame must be grounded, and the grounding design should be in accordance with local national, regional or international regulations, laws and standards, and the grounding connection should be carried out by qualified electricians;
- f) The grounding device must penetrate the anodic oxide film of the component frame and make full contact with the interior of the aluminum alloy, and the grounding conductor must be connected to earth ground through a suitable grounding electrode;
- g) There are grounding holes with a diameter of 4mm on the long side of the back frame of the module by the edge part, the hole can only be used for grounding, cannot be used for the installation of the module, and the frame of the module shall not be punched with additional holes;
- h) Grounding devices and materials shall be provided by qualified manufacturers. Bolts, nuts and washers shall be of a size to match the grounding hole and made of stainless steel, and grounding wires shall be made of copper core wires with a size of AWG 6-12 ($4\text{-}14\text{mm}^2$) and shall comply with the requirements of the relevant local national, regional or international regulations, laws and standards;
- i) JinkoSolar recommends two types of grounding: bolted grounding, shown in Figure 11, and clamp grounding.

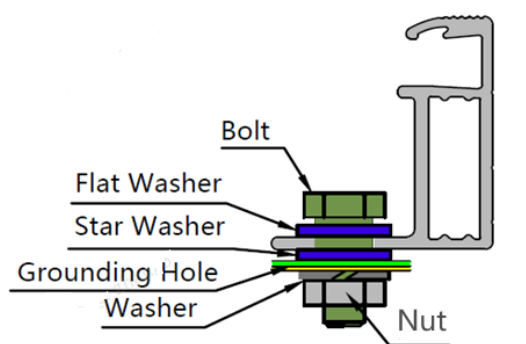


Fig. 11 Grounding of PV modules

- j) Follow the requirements of applicable local and national electrical codes.;
- k) Modules contain factory-installed bypass diodes. If modules are incorrectly connected to each other, the bypass diodes, cables or junction boxes may be damaged;
- l) The length of the junction box shall be determined according to the component specifications and the customer's design proposal. As shown in Figure 12 below, consider the length of the lead wire before designing the wiring;

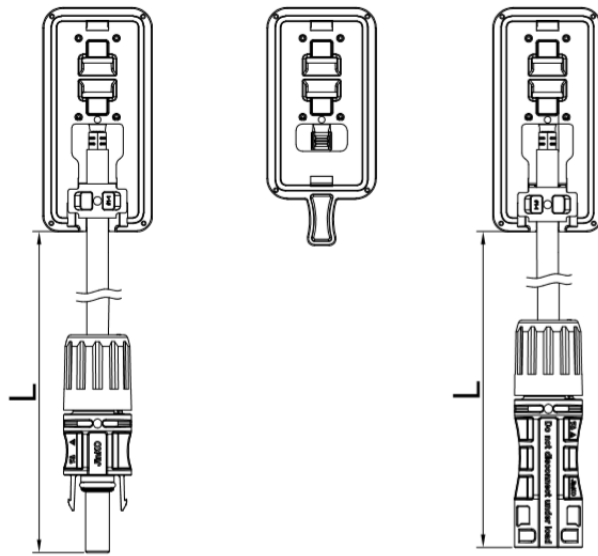


Fig. 12 The half-cut cell module/ split junction box

- m) -If modules are connected in series, the total voltage is equal to the sum of individual voltages. The recommended system voltage is as below,

$$\text{System voltage} \geq N \cdot V_{oc} [1 + TC_{Voc} \cdot (T_{min} - 25)]$$
 -If the modules are connected in parallel, the recommended number of modules in parallel is:

$$\text{maximum series fuse rating} / I_{sc} + 1;$$

Where:

N module numbers in series

V_{oc} Open circuit voltage (refer to product label or data sheet)

TC_{Voc} Temperature coefficient of open circuit voltage (refer to product label or data sheet)

T_{min} Minimum ambient temperature

- n) For floating projects, please contact local technical support;
- o) Connectors and bypass diodes from different manufacturers should not be mated together. If such replacement is needed, please contact JinkoSolar.

4. Maintenance and Care

It is required to perform regular inspection and maintenance of the modules, especially during the warranty period. To ensure optimum module performance, Jinko recommends the following maintenance measures:

4.1 Visual Inspection

Inspect the modules visually to find if there are any visual defects, if there are, the following items should be evaluated:

- a) If the modules are observed having slight module color differences at different angles, this is a normal phenomenon for modules with anti-reflection coating technology. If the colors are within the cell, please consult Jinko for further analysis;
- b) Whether the glass is broken;
- c) No sharp objects are in contact with the PV module surfaces;
- d) The PV modules are not shaded by unwanted obstacles or foreign material;
- e) Corrosion along the cells' busbar. The corrosion is caused by moisture intrusion through the module backsheet. Check the backsheet for damage;
- f) Check whether the back sheet is burnt;
- g) Check if screws and mounting accessories are tight, adjust and tighten as necessary.

4.2 Cleaning

- a) A buildup of dust or dirt on the module front face will result in a decreased energy output. Clean the module preferably once per annum, more frequently in dusty conditions, using soft cloth dry or damp. Water with high mineral content may leave deposits on the glass surface and is not recommended. It is recommended to use neutral water of the PH value ranging from 6.5 to 8.5 to clean the glass, so as not to cause damage to the glass coating layer;
- b) Never use abrasive material under any circumstances;
- c) In order to reduce the potential for electrical and thermal shock, Jinko recommends to clean PV modules during early morning or late afternoon hours when solar irradiation is low and the modules are cooler, especially in regions with hot temperatures;
- d) Never attempt to clean PV module with broken glass or other signs of exposed wiring, as this presents a shock hazard;
- e) Never use chemicals when cleaning modules as this may affect the module warranty and energy yield. For the environment with extreme climate, please contact Jinko after-sales department for specific requirement if needed;
- f) For single-side module, backsheet cleaning is not necessary; for dual-glass module, cleaning the

module backside regularly when necessary, and follow the requirements in 4.2 a) – e). Please wear insulated gloves and pay special attention to the cables and electrical connections during the backside cleaning.

4.3 Inspection of Connector and Cable

It's recommended to implement the following preventive maintenance every 6 months:

- a) Check the sealing gels of the junction box for any damage.
- b) Examine the modules for signs of deterioration. Check all wiring for possible rodent damage, weathering and that all connections are tight and corrosion free. Check the electrical grounding.

For more details, please refer to O&M manual

5. Electrical Specification

The electrical properties of the components were measured under standard test condition. In some cases, the component may produce a voltage or current value higher or lower than the rated value. For specific electrical performance parameters, refer to the datasheet in the QR code below. (Note: the tolerance for Voc is $\pm 5\%$, for Isc is $\pm 5\%$ and for Pmp is $\pm 3\%$, Maximum System voltage is 1500V DC)



6. Disclaimer of Liability

Because the use of the manual and the conditions or methods of installation, operation, use and maintenance of photovoltaic (PV) product are beyond Jinko's control, Jinko does not accept responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with such installation, operation, use or maintenance.

No responsibility is assumed by Jinko for any infringement of patents or other rights of third parties, which may result from use of the PV product. NO license is granted by implication or otherwise under any patent or patent rights.

The information in this manual is based on Jinko's knowledge and experience and is believed to be reliable, but such information including product specification (without limitations) and suggestions do not constitute a warranty, expresses or implied. Jinko reserves the right to change the manual, the PV produce, the specifications, or product information sheets without prior notice.

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Jinko Solar Australia Holdings Co. Pty Ltd

2022 Modern Slavery Statement

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The information published in this document is subject to be changed, and JINKO holds ultimate competence over the interpretation of this document.

Introduction

This statement is issued by Jinko Solar Australia Holdings Co. Pty Ltd (ACN 154 662 889) for the year ended 31 December 2022.

Jinko Solar Australia Holdings Co. Pty Ltd is incorporated in Australia and our registered office address is Suite 2A, 152 Marsden St, Parramatta NSW 2150.

Jinko Solar Australia Holdings Co. Pty Ltd (**Jinko Solar**) is a subsidiary of Jinko Solar Holding Co., Ltd. registered in the Cayman Islands. Jinko Solar Holding Co., Ltd together with its subsidiaries (**Jinko Solar Group**) is one of the largest and most innovative solar module manufacturers in the world.

This is our third modern slavery statement under the *Modern Slavery Act 2018* (Cth) and sets out the actions we have taken to assess and address modern slavery risks in our operations and supply chains.

This statement has been approved by the Board of Jinko Solar on June 12, 2023.

Our Commitment

Jinko Solar holds high standards of business ethics internally and for our suppliers and is committed to upholding these principles with respect to our own employees, hiring practices and workplace operations, as well as for workers across our supply chain. Jinko Solar has a strong track record of industry-leading workplace practices and promoting social responsibility.

When engaging with our suppliers, Jinko Solar has always observed high ethical and business standards, carried out fair operations, protected legitimate rights and interests of suppliers, supported their growth and taken the lead in driving suppliers to fulfil their social responsibilities.

At the community level, we assume the responsibility of promoting social progress. We not only strive to achieve success in our core business, but strongly support public service activities. Jinko Solar is fully committed to conduct its business in a lawful and ethical manner, including engaging with suppliers who also respect human rights, providing safe and inclusive workplaces, and promoting a sustainable future.

Jinko Solar operations and supply chain

Operations

Jinko Solar is engaged in the business of supplying solar modules. Goods sold by Jinko Solar comes with Jinko limited warranty. Related terms and conditions are available on our website for reference.

We would also like to recognize the role of local community support in our success and growth story and we are dedicated to boosting the local economy and supporting local employment. Our customers in Australia value local service. Our full-service local team continues to expand, focusing on the growth of solar modules in residential, commercial, and utility industries.

By the end of 2022, Jinko Solar employed 15 employees. These employees also facilitate corporate and warranty services such as, finance, logistics, sales and marketing to support our day-to-day business operations.

More information about our operations can be found on our website at <https://www.jinkosolar.com.au>

Our Participation to United Nations Global Compact

Jinko Solar joined the United Nations Global Compact on 1st February 2021 as participant, with the aim to make the Ten Principles part of the strategy, culture and day-to-day operations of the company.

On February 18th, 2022, Jinko Solar published the Jinko Communication on Progress, which renovate Jinko Solar continued support to the United Nations Global Compact and to its Ten Principles and describes the actions or policies concerning human rights, labour, environment, anti-corruption as well as a measurement of the outcome.

On March 14th, 2022, Jinko Solar received the UNGC Best Practices Sustainable Award 2021. The award nominees underwent a rigorous and documented process of successive stages of short-listing by multi-disciplinary experts, who assessed the performance of companies in each of the four areas of the UN Global Compact, namely Human Rights, Environment, Labour and Transparency.

Our supply chain

The solar modules are supplied to Jinko Solar through Jinko Solar Group entities. Jinko Solar does not directly source any raw materials or components as a part of its independent supply chain. The supply chain of the Jinko Solar Group involves various components and raw materials, including polysilicon, ingots, wafers, solar cells, frames, connectors and junction boxes, etc. which ultimately results in a final product i.e. solar modules. These materials are sourced by Jinko Solar Group through suppliers and vendors mainly across China, Germany, South Korea, and United States.

Jinko Solar also sells solar modules through a network of authorized dealers and distributors. We engage these third parties on a contractual basis and these contracts are reviewed and renewed regularly.

Jinko Solar contracts third party companies which provide warehouse facilities to Jinko Solar in Sydney, Melbourne, Brisbane, Adelaide and Perth.

We also have a number of direct service providers in Australia, primarily catering to ancillary business support services such as finance, logistics, customs clearance agents, legal support and office administration, etc.

Modern slavery risks, assessment and profile

We recognise that there may be potential risks of modern slavery in the solar module manufacturing industry as a result of manual labour associated with the manufacturing industry or related to raw materials and service-related suppliers.

Modern slavery risks may impact our business and we endeavour to reduce the risk that we might contribute to modern slavery through our operations and supply chains.

Modern slavery risks were assessed to be lower for our warranty and corporate services offered post sale, due to the nature of our highly-skilled workforce and governing regulations. Jinko Solar Group has strict labour compliance requirements with reference to the guidelines of the International Labour Organization.

Jinko Solar has assessed the risks of modern slavery in its supply chain as described in this section. Our risk assessment methodology considers indicators of modern slavery including sector and industry, together with the type of products and services procured. Jinko Solar deployed self-assessment questionnaires (SAQs) to our suppliers in 2022 to map out potential risks and identify areas of high-risk exposure. We also used a third-party tool to retrieve

compliance data regarding suppliers and business partners. This tool includes modern slavery risks, and enables us to have oversight of emerging risks and be able to manage these accordingly.

Jinko Solar only sources finished products of solar modules through Jinko Solar Group entities. Jinko Solar does not directly source raw materials or components.

Actions to assess and address risk

Jinko Solar is committed to open and transparent business practices and aims to ensure that our approach to modern slavery adheres to the requirements of the Modern Slavery Act 2018 (Cth) and associated legislation. We have implemented the below actions to ensure that our employees uphold these standards and ensure that our suppliers are aware of our commitments.

Due diligence and remediation action

Jinko Solar Group has implemented the following due diligence activities to monitor modern slavery risks in its own operations and supply chain:

- A SAQ was rolled out to our suppliers as part of our ongoing due diligence efforts to map out potential risks in the supply chain and identify areas of high-risk exposure to prioritize resources and further monitoring.
- Use of a third-party proprietary web scanning tool to retrieve compliance data regarding supplier and business partners. The tool covers the risk areas of human rights, vulnerable minorities, ethical violations, environment, health and safety, and financial instability. The evaluation enables Jinko Solar Group to have oversight of emerging and existing risks, and to be able to manage these accordingly through supplier engagement, monitoring and due diligence.
- Jinko Solar corporate social responsibility assessment standard was further developed during 2022, in consonance with international recognized standards such as the ones developed by the Responsible Business Alliance. The newly implemented standard concerns employment relationship management, protection of child labour and underage workers, working hours, salary and welfare, anti-discrimination, humane treatment and punishment, freedom of association and collective negotiation, health and safety, environment and other comparable matters.
- Based on the results of the risk assessment, social compliance audits were conducted by both internal audit team as well as an independent third-party auditor.

Training

To maintain awareness and ensure a high level understanding of the risks of modern slavery and human trafficking in our business, Jinko Solar informed both partner along the supply chain as well as internal stakeholder (e.g. our purchasing team) through professional training and experience sharing,

Jinko Solar established a targeted training mechanism for all its suppliers, which is carried out on annual, semi-annual and quarterly basis, both on site and remotely, with at least three (3) hours of training per year for each of its suppliers.

While helping its supplier and partners to understand the risk of modern slavery as aforementioned, Jinko Solar employees have also been made aware and are periodically made aware of the risk through relevant training and communication on an annual basis.

Assessing effectiveness

Jinko Solar Group assess the effectiveness of our assessments and programmes to identify and remediate modern slavery risks in a number of ways:

- Jinko Solar Group made available several and different internal and external grievance channels, some of which guarantee the anonymity of the reporter's identity, in order to timely collect the relevant information, e.g. physical mail box, hotline, internal platform.
- Both internal and third party annual audits were implemented to verify that corrective actions have been implemented on the ground.

We are committed to continually monitoring the effectiveness of the measures established so far. We will continue to track our actions and outcomes, partner with suppliers and other external partners, and undertake regular internal governance and external assurance processes. This will ensure that we can mitigate and address potential modern slavery risks, and adhere to the UN Guiding Principles and all applicable labour and social compliance requirements.

Policies and procedures

We have a comprehensive set of policies and procedures to ensure we have strong frameworks to enable us to assess and address modern slavery risks.

For the year 2022, we have engaged with third-party independent auditors as well as internal audit team to conduct a complete audit (including corporate social responsibility audit) on our key facilities. The audit result is non findings of risks connected with modern slavery.

These policies and procedures complement our existing governance framework and ensure that our employees and suppliers clearly understand our expectations. In accordance also with our participation to the UN Global Compact we aim to continuously improve our policies.

The following policies are those that aim to prevent modern slavery amongst our team members and workers in our supply chains:

Policy/Procedure	Purpose
Jinko Solar Partner Code of Conduct	This code applies to all our service providers, distributors, suppliers of goods, customers, consultants, independent contractors of Jinko Solar Group. This code reflects our requirements of our partners regarding ethical conduct and social responsibility. The code of conduct includes specific provisions on forced labour related indicators, and can be found at https://jinkosolarcdn.shwebspace.com/uploads/JKSPartnerCOC.pdf
Code of Business Conduct and Ethics	This code contains guidelines for conducting business related to Jinko Solar Group, and applies to all employees and other relevant personnel representing Jinko Solar Group. To the extent that this Code requires a higher standard than required by commercial practice or applicable laws, rules, or regulations, we adhere to these higher standards. The full code is via this link: https://jinkosolarcdn.shwebspace.com/uploads/CODE%20OF%20BUSINESS%20CONDUCT%20AND%20ETHICS%20v%202.0-EN.pdf

Jinko Solar Anti-Corruption and Anti-Bribery Code	This code provides specific standards for all employees and other relevant personnel representing the Jinko Solar Group to abide by relevant to anti-corruption and anti-bribery laws in the process of business activities.
Participation to United Nations Global Compact	The participation to the United Nations Global Compact implies the commitment of Jinko Solar to adhere to and implement the Ten Principles.
Jinko Solar Labour Principles Report	This report provides an outlook on the laws and principles complied with and adhered to by Jinko Solar concerning the employment relationship. The full report is via this link: https://jinkosolarcdn.shwebspace.com/uploads/Jinko%20Solar%20Labour%20Principles%20Report.pdf

Supplier engagement

As noted above, Jinko Solar has an established Partner Code of Conduct which suppliers are contractually obligated to comply with. The guiding principles include prohibitions against the practices of child labour and forced labour and requirements on working hours, wage payments, discrimination and corruption.

Jinko Solar promotes the concept of fair procurement and equal opportunities. We implement a supplier management system and evaluate suppliers on a number of criteria, including labour compliance. Jinko Solar Group regularly evaluates the performance of qualified suppliers and conducts on-site visits of suppliers when necessary.

During 2022, we further revised and updated the Partner Code of Conduct with an objective to make it more robust, comprehensive and stringent and the same can be found at our official website.

Jinko Solar actively encourages its suppliers to build, develop and keep good ESG and CSR practices, also through establishing incentive mechanisms such as: supplier rewards, which includes being listed as preferred supplier, preferential invitation and other comparable rewards. The aim of such mechanisms is to build and develop more knowledge and awareness among the supply chain regarding the environmental and corporate social responsibility.

Reporting mechanisms

There are efficient reporting mechanisms in place to ensure the swift identification of and response to risks, including non-compliance with policies and procedures of Jinko Solar. Jinko Solar will continue to evaluate the extent to which existing reporting mechanisms can be encouraged as a way for employees and suppliers to raise grievances and escalate suspected or actual occurrences of modern slavery in our operations and supply chains.

COVID-19

The COVID-19 pandemic has brought further challenges to modern slavery and highlighted social and economic inequalities worldwide. We have assessed the impact of COVID-19 pandemic on our practices and risks to modern slavery.

During the reporting period, Jinko Solar experienced unexpected business disruption due to the impacts of the COVID-19 global pandemic.

We worked closely with our business partners and suppliers both locally and overseas to ensure continuity of business delivery in a COVID safe manner, security of employment and maintenance of equivalent pay and conditions for our business partner team members where possible. The safety and wellbeing of our people and our teams continues to be our priority and will always be our priority.

Consultation

As a subsidiary of Jinko Solar Holding Co., Ltd., Jinko Solar's approach to modern slavery is largely comprised of overarching policies, systems and processes that are designed to be consistently applied across the Jinko Solar Group.

During the reporting period of 2022, there was consistent consultation and collaboration between Jinko Solar and the Jinko Solar Group. This statement is a result of collaborative work across relevant departments including sales, human resources, procurement, logistics, finance, and legal and eventually was put across to the Board of Jinko Solar for review and approval.

FY2023 focus

In FY2023 we aim to focus on:

- Establishing and examining more comprehensive policies and procedures to address modern slavery issues and ensuring their implementation.
- Clear and effective communication with vendors and suppliers regarding our commitment to compliance with the UK Modern Slavery Act 2015 and our zero-tolerance approach towards forced labour.
- Continuing risk assessments of, and as necessary, additional engagement with suppliers including self-assessment questionnaires and external audits.
- Continuing to promote an environment that encourages reporting concerns and protects whistle blowers, including improved policies and reporting mechanism.
- Further improvement of our policies in alignment with United Nations Global Compact Ten Principles.

Signed By:



Mr. Wensu Yuan

Title: Director

Date 【12 June 2023】