

SUN2000-50KTL-M3 Smart PV Controller



Higher Yields

Up to 30% More Energy
with Optimizer



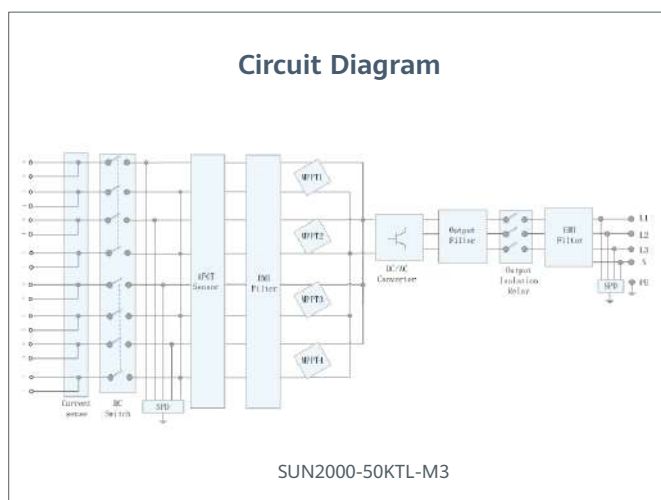
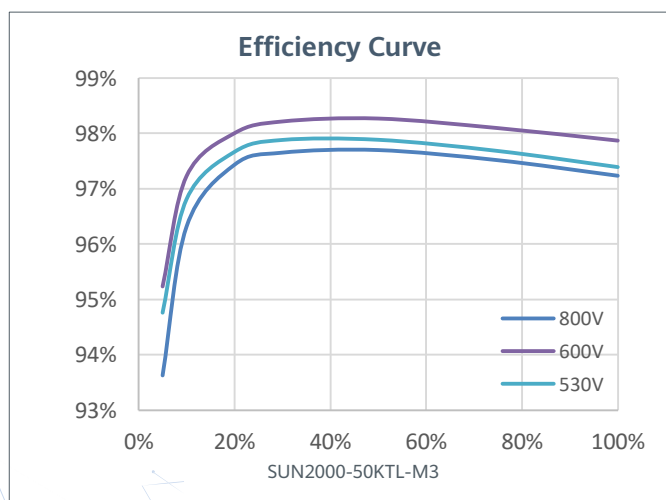
Active Safety

AI Powered
Active Arcing Protection



Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported



SUN2000-50KTL-M3

Technical Specification

Technical Specification

SUN2000-50KTL-M3

Efficiency	
Max. Efficiency	98.5%
European Efficiency	98.0%

Input	
Max. Input Voltage ¹	1,100 V
Max. Current per MPPT	30 A
Max. Current per Input	20 A
Max. Short Circuit Current per MPPT	40 A
Start Voltage	200 V
MPPT Operating Voltage Range ²	200 V ~ 1,000 V
Rated Input Voltage	600 V
Number of Inputs	8
Number of MPP Trackers	4

Output	
Rated AC Active Power	50,000 W
Max. AC Apparent Power	55,000 VA
Max. AC Active Power (cosφ=1)	55,000 W
Rated Output Voltage	400 Vac / 480 Vac, 3W+(N) + PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Rated Output Current	72.2 A @ 400Vac, 60.1 A @ 480Vac
Max. Output Current	79.8 A @ 400Vac, 66.5 A @ 480Vac
Adjustable Power Factor Range	0.8 LG ... 0.8 LD
Max. Total Harmonic Distortion	<3%

Protection	
Input-side Disconnection Device	Yes
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
PV-array String Fault Monitoring	Yes
DC Surge Arrester	Type II
AC Surge Arrester	Type II
DC Insulation Resistance Detection	Yes
Residual Current Monitoring Unit	Yes
Arc Fault Protection	Yes
Ripple Receiver Control	Yes
Integrated PID Recovery ³	Yes

Communication	
Display	LED Indicators, Bluetooth + APP
RS485	Yes
Smart Dongle	WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional)
Monitoring BUS (MBUS)	Yes (Isolation Transformer required)

Optimizer Compatibility	
DC MBUS Compatible Optimizer	MERC-1100/1300W-P

General Data	
Dimensions (W x H x D)	640 x 530 x 270 mm (25.2 x 20.9 x 10.6 inch)
Weight (with mounting plate)	49 kg (108.1 lb)
Operating Temperature Range	-25°C ~ 60°C (-13°F ~ 140°F)
Cooling Method	Smart Air Cooling
Max. Operating Altitude	4,000 m (13,123 ft.)
Relative Humidity	0% RH ~ 100% RH
DC Connector	Amphenol HH4
AC Connector	Waterproof Connector + OT/DT Terminal
Protection Degree	IP 66
Topology	Transformerless
Nighttime Power Consumption	≤ 5.5W

Standard Compliance (more available upon request)	
Safety	EN 62109-1/-2, IEC 62109-1/-2, EN 50530, IEC 62116, IEC 60068, IEC 61683
Grid Connection Standards	IEC 61727, VDE-AR-N4105, VDE 0126-1-1, BDEW, G59/3, UTE C 15-712-1, CEI 0-16, CEI 0-21, RD 661, RD 1699, P.O. 12.3, RD 413, EN-50438-Turkey, EN-50438-Ireland, C10/11, MEA, Resolution No.7, NRS 097-2-1, DEWA

1. The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.
2. Any DC input voltage beyond the operating voltage range may result in inverter improper operating.
3. SUN2000-30~50KTL-M3 raises potential between PV- and ground to above zero through integrated PID recovery function to recover module degradation from PID. Supported module types include: P-type (mono, poly), N-type (nPERT, HIT)
4. 50KTL Platform only supports C&I Optimizer(MERC-1100/1300W-P). The current version does not support this function and it can be upgraded to optimizer version via new inverter software version(Dec 30th, 2022)
Refer to [HTTP://solar.huawei.com/](http://solar.huawei.com/)



Limited Warranty for LONGi Solar Modules

Distributed Generation Market

1. Limited Warranty

The warranty start date of the Solar Modules stipulated under this Limited Warranty for Solar Modules (hereinafter referred to as "Limited Warranty") is the date of delivery to the Initial Customer or 6 months after the modules are shipped out of the production plant, whichever is earlier (hereinafter referred to "Warranty Start Date"). For the avoidance of doubt, the aforesaid Initial Customer means the Buyer as agreed in the Sales Contract for sale of the Solar Modules.

1.1. 12-Year Limited Product Warranty

The Supplier warrants that for a period of 12 years since the Warranty Start Date that the Solar Modules (including the DC connectors and cables) will be free of defects in material or workmanship which affects the performance of the modules, provided that the Solar Modules are installed, utilized and maintained according to the stipulations of the Installation Manual provided by the Supplier, which may be updated from time to time. Defects do not include changes in appearance or normal wear and tear of the Solar Modules after the modules is installed. Performance warranty for the power output is not included here but it shall be specifically elaborated in the "Limited Performance Warranty" section below.

	LR5 Series	LR4 Series	LR6 Series	
72&78 Cell	LR5-72HGD-xxxM LR5-72HPH-xxxM LR5-72HBD-xxxM LR5-72HIBD-xxxM	LR4-72HPH-xxxM LR4-78ZPH-xxxM LR4-72HBD-xxxM LR4-78ZBD-xxxM LR4-72HIH-xxxM	LR6-72PE-xxxM LR6-72PB-xxxM LR6-72HPH-xxxM LR6-72OP-xxxM LR6-78HP-xxxM LR6-78HPB-xxxM LR6-72HBD-xxxM LR6-78HBD-xxxM	LR6-72PH-xxxM LR6-72HP-xxxM LR6-72HPB-xxxM LR6-72OPH-xxxM LR6-78HPH-xxxM LR6-72BP-xxxM LR6-72OPD-xxxM LR6-72HIH-xxxM
60&66 Cell	LR5-66HPH-xxxM LR5-66HBD-xxxM LR5-60HIBD-xxxM LR5-66HIBD-xxxM	LR4-60HPH-xxxM LR4-60HPB-xxxM LR4-66HPH-xxxM LR4-66HP-xxxM LR4-60HBD-xxxM LR4-60HIH-xxxM LR4-60HIB-xxxM LR4-66HIH-xxxM	LR6-60PE-xxxM LR6-60PB-xxxM LR6-60HPH-xxxM LR6-60OP-xxxM LR6-66HP-xxxM LR6-66HPB-xxxM LR6-60HBD-xxxM LR6-66HBD-xxxM LR6-60HIB-xxxM	LR6-60PH-xxxM LR6-60HP-xxxM LR6-60HPB-xxxM LR6-60OPH-xxxM LR6-66HPH-xxxM LR6-60BP-xxxM LR6-60OPD-xxxM LR6-60HIH-xxxM
50&54 Cell	LR5-54HPH-xxxM LR5-54HPB-xxxM LR5-54HIH-xxxM	LR4-50HPH-xxxM		

1.2. Limited Performance Warranty

A. The Supplier warrants for a period of 25-year performance warranty ("Performance Warranty Period") in details as below: during the first year of the Performance Warranty Period, the actual power output (performance) of the modules will reach at least 98% of the nominal power output; and from the second year, the actual power output will decline annually by no more than 0.55% for a period of 24 years; by the end of the 25th year, an actual output of at least 84.8% of the nominal power output is guaranteed.

Actual Power Output (Year=1) \geq Nominal Power * (1 - 2%)

Actual Power Output(Year=N, $2 \leq N \leq 25$) \geq Nominal Power * (1 - (2% + 0.55% * (N-1)))

Modules are only applicable to the following module types that a period of 25 years since the Warranty Start Date.

	LR5 Series	LR4 Series	LR6 Series	
72&78 Cell	LR5-72HPH-xxxM	LR4-72HPH-xxxM LR4-72HIH-xxxM LR4-78ZPH-xxxM	LR6-72PE-xxxM LR6-72PB-xxxM LR6-72HPH-xxxM LR6-72OP-xxxM LR6-72HIH-xxxM LR6-78HPH-xxxM	LR6-72PH-xxxM LR6-72HP-xxxM LR6-72HPB-xxxM LR6-72OPH-xxxM LR6-78HP-xxxM LR6-78HPB-xxxM
60&66 Cell	LR5-66HPH-xxxM	LR4-60HPH-xxxM LR4-60HPB-xxxM LR4-60HIH-xxxM LR4-60HIB-xxxM LR4-66HIH-xxxM LR4-66HPH-xxxM LR4-66HP-xxxM	LR6-60PE-xxxM LR6-60PB-xxxM LR6-60HPH-xxxM LR6-60OP-xxxM LR6-60HIH-xxxM LR6-66HP-xxxM LR6-66HPB-xxxM	LR6-60PH-xxxM LR6-60HP-xxxM LR6-60HPB-xxxM LR6-60OPH-xxxM LR6-60HIB-xxxM LR6-66HPH-xxxM
50&54 Cell	LR5-54HPH-xxxM LR5-54HPB-xxxM LR5-54HIH-xxxM	LR4-50HPH-xxxM		

B. The Supplier warrants for a period of 30-year performance warranty ("Performance Warranty Period") in details as below: during the first year of the Performance Warranty Period, the actual power output (performance) of the modules will reach at least 98% of the nominal power output; and from the second year, the actual power output will decline annually by no more than 0.45% for a period of 29 years; by the end of the 30th year, an actual output of at least 85.0% of the nominal power output is guaranteed. For the avoidance of doubt, this limited performance warranty only applies to the actual power output of the front-side of the modules.

Actual Power Output (Year=1) \geq Nominal Power * (1 - 2%)

Actual Power Output(Year=N, $2 \leq N \leq 30$) \geq Nominal Power * (1 - (2% + 0.45% * (N-1)))

Modules are only applicable to the following module types that a period of 30 years since the Warranty Start Date.

	LR5 Series	LR4 Series	LR6 Series	
72&78 Cell	LR5-72HBD-xxxM LR5-72HIBD-xxxM	LR4-72HBD-xxxM LR4-78ZBD-xxxM	LR6-72BP-xxxM LR6-72OPD-xxxM	LR6-72HBD-xxxM LR6-78HBD-xxxM
60&66 Cell	LR5-66HBD-xxxM LR5-60HIBD-xxxM LR5-66HIBD-xxxM	LR4-60HBD-xxxM	LR6-60BP-xxxM LR6-60OPD-xxxM	LR6-60HBD-xxxM LR6-66HBD-xxxM

C. The Supplier warrants for a period of 30-year performance warranty (“Performance Warranty Period”) in details as below: during the first year of the Performance Warranty Period, the actual power output (performance) of the modules will reach at least 99% of the nominal power output; and from the second year, the actual power output will decline annually by no more than 0.4% for a period of 29 years; by the end of the 30th year, an actual output of at least 87.4% of the nominal power output is guaranteed. For the avoidance of doubt, this limited performance warranty only applies to the actual power output of the front-side of the modules.

Actual Power Output (Year=1) \geq Nominal Power * (1 – 1%)

Actual Power Output(Year=N, $2 \leq N \leq 30$) \geq Nominal Power * (1 – (1% + 0.4% * (N-1)))

Modules are only applicable to the following module types that a period of 30 years since the Warranty Start Date.

	LR5 Series
72&78 Cell	LR5-72HGD-xxxM

The actual power output is to be measured under standard testing condition (“STC” or “Standard Test Conditions”) in an independent testing lab accepted by the Supplier or previously designated by the Supplier, and when measuring the actual power output, measurement equipment tolerance is to be taken into consideration, as per IEC60904.

Standard Test Conditions are: Air mass 1.5, wind speed 0m/s, irradiance 1000W/m², cell temperature 25°C.

2. Warranty Claim Procedure

In any case, any and all warranty claims shall be submitted to the Supplier or its authorized distributor in writing or by mail within the corresponding warranty period. The customer shall provide necessary evidence documents for its claim. If the customer believes that the Solar Module does not meet the requirements of the "Limited Warranty", the customer should notify the sales team or global technical service department of the Supplier in writing or submit the notice via email through "Contact LONGi" button on the Supplier's global official website page (the website is www.longi.com) within 30 days after the claim is identified. The notice should include the following information: (a) the claimant; (b) a detailed description of the claim; (c) supporting materials, including photos or data; (d) serial number of affected module; (e) evidence for purchase of the affected module; (f) model of the affected module; (g) project location; (h) other supplementary information required by the Supplier.

In the event the Customer fails to notify the Supplier and provide the relevant information of (a)–(h) as described above within the time required by the Supplier, the Supplier is entitled to refuse to process the relevant claim demand without any liability until the Customer has provided the relevant information as required by the Supplier.

The Supplier will review and evaluate alleged claims after receipt of the claim and full information as stipulated herein. If the Supplier at its sole discretion considers it necessary, the Supplier can request the module be shipped back to the Supplier's factory for testing, in which case, the Supplier will provide the customer with a Return Merchandise Authorization ("RMA"). In the absence of such RMA, any returned module will not be accepted by the Supplier. In the event the Customer returns the Solar Modules without written agreement of the Supplier, the risks (including but not limited to damage and loss of the Solar Modules) and expenses related to the Solar Modules shall be borne by the Customer. Subject to the approval of the Supplier's technical service department, the necessary and documented shipping costs related to the Limited Product Warranty or the Limited Performance Warranty will be compensated by the Supplier to the customer.

The Supplier is entitled to decide whether to send a representative to investigate the alleged claims on site and related cost and expenses shall be borne by the Supplier. In the event that the Supplier decides to send a representative to the product installation site for verification, the customer shall actively cooperate for such investigation. If the customer refuses the Supplier to enter the site for investigation without a proper and appropriate reason, the Supplier has the right to extend the claim process until necessary evidence is provided; if the customer requires the concerned modules to be sent to an independent third-party testing agency for test (the lab must be approved by both parties), the customer will pay for the reasonable costs incurred by such test in advance. If the test results from the third-party testing agency determines that the existence of a module failure and the cause of such failure lies with the Supplier, then the reasonable and direct and documented costs incurred due to such test can be passed on to the Supplier, including shipping freight, transportation insurance, and laboratory testing costs, etc.

3. Remedies for Claims

In the event that the customer claims that the module(s) fails to meet the “Limited Warranty” as described in Sections 1.1 and 1.2 above and the Supplier confirms the cause for such defect lies on the product material or workmanship; or at the request of the client, a mutually-agreed third-party testing was done to reveal that the cause of such defect lies on the material or workmanship, then the Supplier shall, at its sole discretion, either.

1. Repair the defective solar modules. In such case, the Supplier shall prepare the repair project plan and carry out the repair project for the affected modules; or
2. Replace the defective modules or provide additional module(s) to make up for the output gap between the guaranteed output and the actual power output of the defective module(s) ; or
3. Refund the residual value of the defective modules or refund the value equivalent of the output gap between the guaranteed power output and the actual power output of the defective module(s).

Residual value = current market price (price-per-watt) * nominal power * left-over service life/ Limited Performance Warranty period

Value Equivalent of Output Gap = current market price (price-per-watt) * (guaranteed power output – actual power output)

Special Note:

1. Unless otherwise agreed by the Parties in written, the repaired module(s) or replacement module(s) will be delivered by the Supplier in accordance with the same Incoterms and destination as the relevant module supply contract. The insurance, freight, customs clearance fees and other reasonable expenses shall be borne in accordance with the Incoterms in the original module supply contract. In the case that the Customer pays for such costs in advance, and expects to contact the Supplier for compensation for such aforesaid costs, the Customer shall provide the invoices to evidence that such costs are incurred from related service providers. Costs incurred due to dismantling, repacking, installation or reinstallation the module(s) and other related expenses shall be borne by the Customer.
2. Any repair or replacement of the affected module(s) shall not renew the applicable warranty period. The warranty period for replaced or repaired module(s) is the remainder of the warranty for the affected modules. The Supplier is entitled to deliver similar module(s) at its sole discretion in replacement of the affected module(s) if the affected module(s) is no longer available. The nominal power of the module(s) used to replace the concerned module(s) shall at least equal or over the power wattage of the affected module(s).
3. Unless instructed by Supplier or required by law, the Customer shall dispose of out-of-use module(s) in accordance with applicable regulations on electronic waste treatment and disposal at its own cost. If the Supplier decides or is required by law to retrieve these defective modules, the ownership of the relevant module(s) belong to the Supplier. In the event the Customer returns the Solar Modules to the Supplier without the prior written consent of the Supplier, the risks (including but not limited to damage or loss of the Solar Modules) and expenses related to the Solar Modules shall be borne by the Customer, and the Supplier is entitled to refuse to deal with the related claims and demands without any liability therefrom. Unless with written authorization from the Supplier, any replaced module(s) shall not be resold, reworked or reused in any way.
4. The buyer is obliged to cooperate with the Supplier to sign a "Settlement Agreement" so that the remedy plan for any alleged claim can be implemented. The Parties agree that the Supplier is entitled to use this as a precondition for fulfilling the obligations under this "Limited Warranty".

4. Liability Exemptions

The Supplier shall be free of any liability in the event that any defect of the Solar Modules is caused by or in connection to the Force Majeure. The Supplier and the Customer understands and agree that the Supplier shall be free of liability in the event any obligations under this “Limited Warranty” is delayed or could not be provided because of the occurrence of the Force Majeure as defined under Clause 9 of this “Limited Warranty”.

Save the stipulations under Clause 9, the Supplier and the Customer understand and agree that this "Limited Warranty" does not apply to any one of the following situations:

1. Module(s) which have been subject to improper installation, use and maintenance due to failure to comply with the relevant provisions of the Supplier's module installation manual, module technical specification and maintenance manual; or
2. Module(s) which have been subject to misuse, abuse, negligence, vandalism or accident; or
3. Module(s) which have been subject to power supply failure, power surge, lightning, flood, fire, accidental damage or other events beyond the control of the Supplier; or
4. Module(s) which have been installed on mobile equipment (except for photovoltaic tracking systems) such as vehicles, ships, etc., or offshore facilities (except for pre-authorized floating systems or fishery-solar hybrid project); or
5. Module(s) which have been subject to system voltage over the rated maximum system voltage or surge; or
6. Module(s) which have been installed on unqualified buildings; or
7. Module(s) which have been installed near extreme heat or in extreme or volatile environmental conditions, causing the module(s) to corrode, oxidize, or to suffer from chemical materials in the environment; or
8. Failure to pay the purchase price to the Supplier or its affiliated company that sells the module(s) to the customer; or
9. Module(s) which have been used in a way that infringes on the intellectual property rights of the Supplier or any other third party (including but not limited to patent rights, trademark rights, etc.);

In addition, when the nameplate and serial number of the module(s) are tampered with, removed or unrecognizable without the written authorization of the Supplier, the claim will be rejected.

5. Limitation of Liability

The Supplier assumes no warranties, express or implied, other than the warranties made herein and specifically disclaims all other warranties, including but not limited to, merchantability or fitness for a particular purpose, usage or application, or other obligations and responsibilities assumed by the Supplier, unless the Supplier expressly recognizes other obligations and responsibilities in a duly signed written document. The customer understands and agrees that the Supplier shall not be liable for personal injury or property damage, and shall not be liable for other losses or injuries caused by or related to the module(s) (including but not limited to any module defect, or any defect arising from improper use and installation of the module(s)). The Supplier excludes all liabilities for any collateral, consequential or special damages. Losses caused by module defect, including but not limited to, loss of profit, loss of power, loss of business opportunity, loss of goodwill, increase of the operating cost or loss of income are clearly excluded here. If the Supplier is liable for compensation to the customer, the total amount of compensation shall not exceed the invoice price of the defective module(s) paid by the customer.

6. Assignment

The Customer can transfer the rights and obligations under this "Limited Warranty" to the subsequent project owner by informing the Supplier in writing of this transfer of rights, provided that:

1. The module(s) remain at the initial installation site without being tempered with; and
2. The purchase price of the module(s) are fully paid to the Supplier or other payable amounts (such as liquidated damages); and
3. This transfer of rights covers all provisions of this "Limited Warranty"; and
4. The transferee agrees to be bound by all terms of this "Limited Warranty".

If required by the Supplier, the Customer shall, within 15 days upon receipt of the notice from the Supplier, provide reasonable evidence to prove the inheritance of ownership. Otherwise, the Supplier shall have the right to refuse to process the relevant claim and shall not be liable for it.

The rights of this "Limited Warranty" shall only be transferred if above mentioned requirements are fully met, otherwise such transfer shall not be binding upon on the Supplier, and the Supplier has the right to refuse to process the relevant demand for claims without any liability.

7. Severability

If a certain section or clause of this "Limited Warranty" itself or its applicability to certain people or certain situation is deemed invalid, ineffective or unable to be implemented, this does not affect the validity of any other sections or clauses of this warranty. In such case, the applicability of other sections or clauses of this shall be regarded as independent and effective.

8. Applicable Law and Dispute Resolution

Any dispute relating to this “Limited Warranty”, including but not limited to, disputes relating to the survival, validity, breach or termination of the “Limited Warranty”, shall be resolved in accordance with the governing law and jurisdiction written in the Solar Module supply contract.

In case a consensus regarding the cause of any module defect cannot be reached between the Supplier and the customer, after confirmed by both parties, authoritative testing facilities, such as Fraunhofer, PI, TÜV SUD, TÜV Rheinland, Intertek, UL, CQC, CGC, etc., can be enlisted to participate in the final settlement. All costs shall be borne by the losing party, unless the court decided otherwise. The Supplier reserves the right of final interpretation.

9. Force Majeure

Force Majeure refers to unforeseeable, unavoidable and insurmountable objective conditions in practice, including but not limited to war, riot, strike, epidemic, quarantine, traffic control and other social events; and earthquake, fire, flood, blizzard, hurricane, lightning, natural disaster and other natural disaster; or due to lack of adequate or adequate labor force, shortage of raw materials or inability to produce capacity, technology or output, or delay not caused by either Party due to delay of construction period due to approval delay of non-municipal supporting facilities; or the delay caused by national laws, regulations, administrative rules or orders and any unforeseeable events beyond the control of the Supplier.

Upon occurrence of Force Majeure or its continuing, in sales or defective product warranty claim, the Supplier cannot fulfill or delay in performance of its obligations under this “Limited Warranty”, the Supplier shall be free of any liability to the loss or damages incurred therefrom, but the Supplier shall promptly notify the Customer regard to the Force Majeure, and shall negotiate with the Customer in time to take necessary measurements to minimize the impact of the Force Majeure.



Hi-MO 5_m

(G2)

LR5-72HPH 540~560M

- Based on M10 wafer, best choice for ultra-large power plants
- Advanced module technology delivers superior module efficiency
 - M10 Gallium-doped Wafer • Integrated Segmented Ribbons • 9-busbar Half-cut Cell
- Excellent outdoor power generation performance
- High module quality ensures long-term reliability



12-year Warranty for
Materials and Processing



25-year Warranty for Extra
Linear Power Output

Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO9001:2015: ISO Quality Management System

ISO14001: 2015: ISO Environment Management System

ISO45001: 2018: Occupational Health and Safety

IEC62941: Guideline for module design qualification and type approval

LONGi



21.7%
MAX MODULE
EFFICIENCY

0~3%
POWER
TOLERANCE

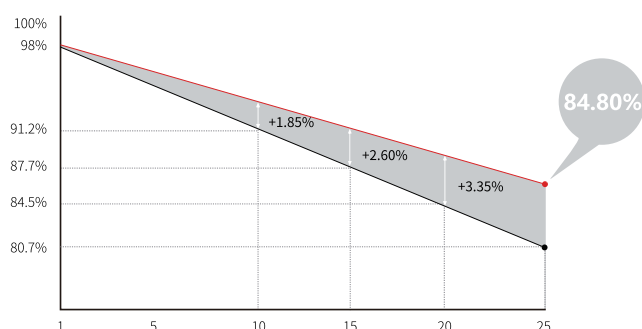
<2%
FIRST YEAR
POWER DEGRADATION

0.55%
YEAR 2-25
POWER DEGRADATION

HALF-CELL
Lower operating temperature

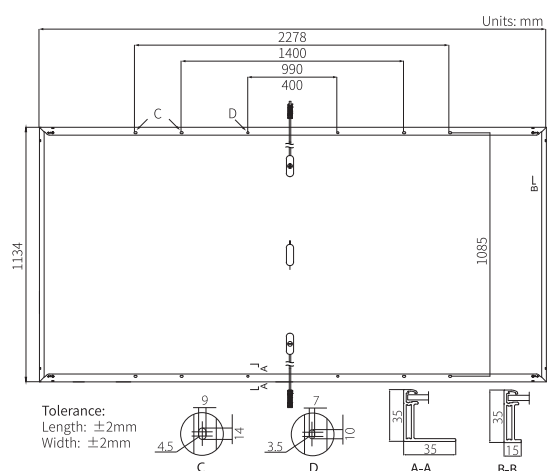
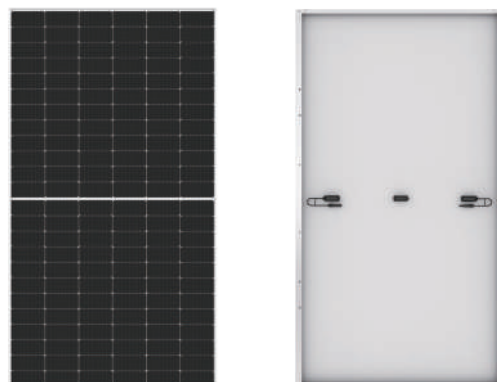
Additional Value

25-Year Power Warranty



Mechanical Parameters

Cell Orientation	144 (6×24)
Junction Box	IP68, three diodes
Output Cable	4mm ² , +400, -200mm/±1400mm length can be customized
Glass	Single glass, 3.2mm coated tempered glass
Frame	Anodized aluminum alloy frame
Weight	27.5kg
Dimension	2278×1134×35mm
Packaging	31pcs per pallet / 155pcs per 20' GP / 620pcs per 40' HC



Electrical Characteristics

STC : AM1.5 1000W/m² 25°C NOCT : AM1.5 800W/m² 20°C 1m/s Test uncertainty for Pmax: ±3%

Module Type	LR5-72HPH-540M		LR5-72HPH-545M		LR5-72HPH-550M		LR5-72HPH-555M		LR5-72HPH-560M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	540	403.6	545	407.4	550	411.1	555	414.8	560	418.6
Open Circuit Voltage (Voc/V)	49.50	46.54	49.65	46.68	49.80	46.82	49.95	46.97	50.10	47.11
Short Circuit Current (Isc/A)	13.85	11.20	13.92	11.25	13.98	11.31	14.04	11.35	14.10	11.40
Voltage at Maximum Power (Vmp/V)	41.65	38.69	41.80	38.83	41.95	38.97	42.10	39.11	42.25	39.25
Current at Maximum Power (Imp/A)	12.97	10.43	13.04	10.49	13.12	10.56	13.19	10.61	13.26	10.67
Module Efficiency(%)	20.9		21.1		21.3		21.5		21.7	

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ 3%
Voc and Isc Tolerance	±3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	25A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Fire Rating	UL type 1 or 2 IEC Class C

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.050%/°C
Temperature Coefficient of Voc	-0.265%/°C
Temperature Coefficient of Pmax	-0.340%/°C

Tiger Pro 72HC

535-555 Watt

MONO-FACIAL MODULE

P-Type

Positive power tolerance of 0~+3%

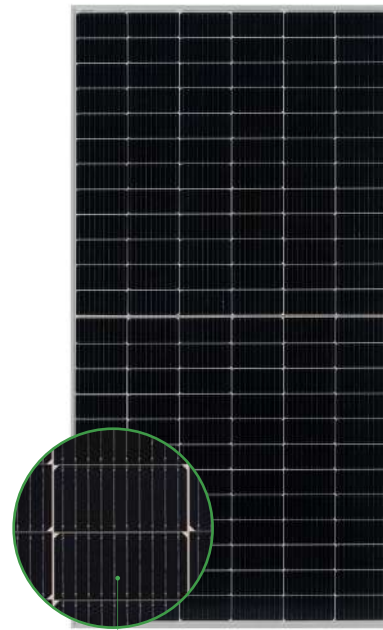
IEC61215(2016), IEC61730(2016)

ISO9001:2015: Quality Management System

ISO14001:2015: Environment Management System

ISO45001:2018

Occupational health and safety management systems



MBB HC Technology

Key Features



Multi Busbar Technology

Better light trapping and current collection to improve module power output and reliability.



Durability Against Extreme Environmental Conditions

High salt mist and ammonia resistance.



Reduced Hot Spot Loss

Optimized electrical design and lower operating current for reduced hot spot loss and better temperature coefficient.



Enhanced Mechanical Load

Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal).



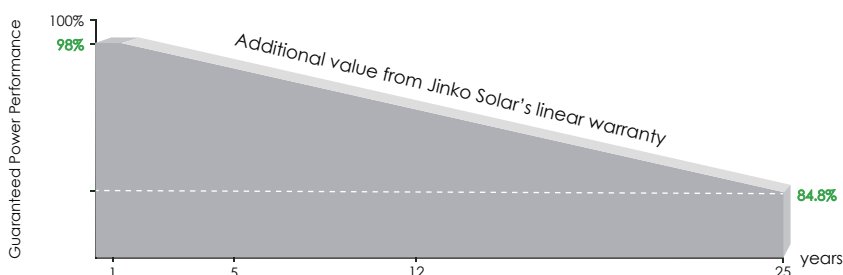
Longer Life-time Power Yield

0.55% annual power degradation and 25 year linear power warranty.



POSITIVE QUALITY™
Continuous Quality Assurance

LINEAR PERFORMANCE WARRANTY

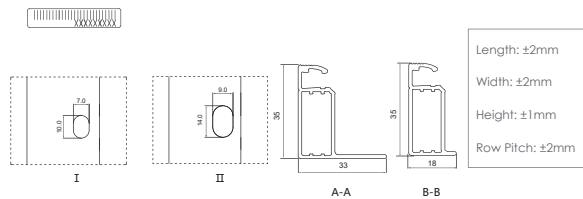
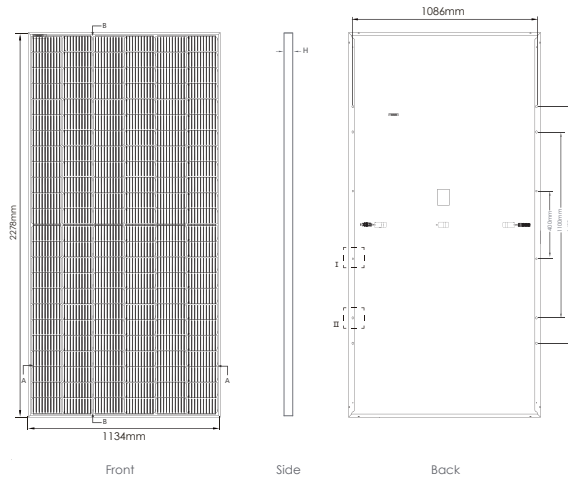


12 Year Product Warranty

25 Year Linear Power Warranty

0.55% Annual Degradation Over 25 years

Engineering Drawings

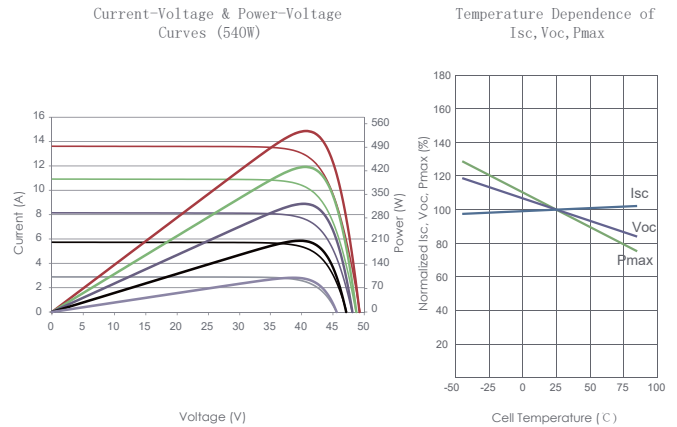


Packaging Configuration

(Two pallets = One stack)

31pcs/pallets, 62pcs/stack, 620pcs/ 40'HQ Container

Electrical Performance & Temperature Dependence



Mechanical Characteristics

Cell Type	P type Mono-crystalline
No. of cells	144 (6×24)
Dimensions	2278×1134×35mm (89.69×44.65×1.38 inch)
Weight	28 kg (61.73 lbs)
Front Glass	3.2mm, Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Output Cables	TUV 1×4.0mm ² (+): 400mm, (-): 200mm or Customized Length

SPECIFICATIONS

Module Type	JKM535M-72HL4		JKM540M-72HL4		JKM545M-72HL4		JKM550M-72HL4		JKM555M-72HL4	
	JKM535M-72HL4-V		JKM540M-72HL4-V		JKM545M-72HL4-V		JKM550M-72HL4-V		JKM555M-72HL4-V	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	535Wp	398Wp	540Wp	402Wp	545Wp	405Wp	550Wp	409Wp	555Wp	413Wp
Maximum Power Voltage (Vmp)	40.63V	37.91V	40.70V	38.08V	40.80V	38.25V	40.90V	38.42V	40.99V	38.59V
Maximum Power Current (Imp)	13.17A	10.50A	13.27A	10.55A	13.36A	10.60A	13.45A	10.65A	13.54A	10.70A
Open-circuit Voltage (Voc)	49.34V	46.57V	49.42V	46.65V	49.52V	46.74V	49.62V	46.84V	49.72V	46.93V
Short-circuit Current (Isc)	13.79A	11.14A	13.85A	11.19A	13.94A	11.26A	14.03A	11.33A	14.12A	11.40A
Module Efficiency STC (%)	20.71%		20.90%		21.10%		21.29%		21.48%	
Operating Temperature(°C)	-40°C~+85°C									
Maximum system voltage	1000/1500VDC (IEC)									
Maximum series fuse rating	25A									
Power tolerance	0~+3%									
Temperature coefficients of Pmax	-0.35%/°C									
Temperature coefficients of Voc	-0.28%/°C									
Temperature coefficients of Isc	0.048%/°C									
Nominal operating cell temperature (NOCT)	45±2°C									

*STC: Irradiance 1000W/m²

Cell Temperature 25°C

AM=1.5

NOCT: Irradiance 800W/m²

Ambient Temperature 20°C

AM=1.5

Wind Speed 1m/s



LIMITED WARRANTY

REV.EN20240726-LINEAR-MONOFACIAL MODULE FOR EU

Jinko Solar Import and Export Co., Ltd. or its affiliates (hereinafter referred to as "Jinko") generally provide the Warranties set forth herein to the original purchaser and its successors and permitted assigns (hereinafter referred to as "Customer") with respect to any solar photovoltaic module (hereinafter referred to as "Module") set forth herein sold by Jinko under purchase agreements signed on or after 26th July, 2024 subject to the terms and conditions herein (hereinafter referred to as "Limited Warranty"). Jinko and Customer may hereinafter be referred to each as a "Party" and collectively as the "Parties" .

This Limited Warranty is only applicable to Modules sold and/or delivered to European countries.

Types of Modules covered by this Limited Warranty						
Series	Module Type	Limited Product Warranty Period (Years)	Limited Power Warranty Period (Years)	First Year Degradation Rate	Annual Degradation Rate	Pmin At The End Of Power Warranty Period
Tiger Neo	JKMxxxN-66HL4M-(V)	12	30	1.00%	0.40%	87.40%
Tiger Neo	JKMxxxN-54HL4R-(V)	15	30	1.00%	0.40%	87.40%
Tiger Neo	JKMxxxN-54HL4R-B	25	30	1.00%	0.40%	87.40%
Tiger Neo	JKMxxxN-72HL4-(V)	12	30	1.00%	0.40%	87.40%
Tiger Neo	JKMxxxN-60HL4-(V)	12	30	1.00%	0.40%	87.40%
Tiger Neo	JKMxxxN-54HL4-(V)	15	30	1.00%	0.40%	87.40%
Tiger Neo	JKMxxxN-54HL4-B	25	30	1.00%	0.40%	87.40%
Tiger Neo	JKMxxxN-78HL4-(V)	12	30	1.00%	0.40%	87.40%
Tiger Pro	JKMxxxM-72HL4-(V)	12	25	2.00%	0.55%	84.80%
Tiger Pro	JKMxxxM-60HL4-(V)	12	25	2.00%	0.55%	84.80%
Tiger Pro	JKMxxxM-54HL4-(V)	15	25	2.00%	0.55%	84.80%
Tiger N-type	JKMxxxN-6RL3-(V)	15	30	1.00%	0.40%	87.40%
Tiger N-type	JKMxxxN-6RL3-B	25	30	1.00%	0.40%	87.40%
Tiger N-type	JKMxxxN-6TL3-(V)	20	30	1.00%	0.40%	87.40%
Tiger N-type	JKMxxxN-6TL3-B	25	30	1.00%	0.40%	87.40%
Tiger P-type	JKMxxxM-7RL3-(V)	12	25	2.00%	0.55%	84.80%

Table 1. Types of Modules covered by this Limited Warranty



LIMITED WARRANTY

REV.EN20240726-LINEAR-MONOFACIAL MODULE FOR EU

1. LIMITED WARRANTY

1.1 Definitions and Table Description

Actual Power Output.

Actual Power Output means the power output of the Module, expressed in Watts, measured at STC at a given point in time in a year after the Warranty Start Date, corrected for any measurement error, as per IEC 61215.

Annual Degradation Rate.

For each year after the first year following the Warranty Start Date until the end of the applicable Limited Power Warranty Period, Jinko warrants that the Degradation Rate of Modules shall not exceed the applicable Annual Degradation Rate set forth at Table 1 applicable for each Module Type.

Degradation Rate.

Degradation Rate means any positive amount calculated in accordance with the following formula, expressed as a percent:

$$\text{Degradation Rate} = (\text{Nominal Power Output} - \text{Actual Power Output}) / \text{Nominal Power Output} \times 100\%$$

First Year Degradation Rate.

In the first year following the Warranty Start Date, the applicable maximum Degradation Rate of Modules set forth at Table 1.

Nominal Power Output.

Nominal Power Output means the original manufactured nameplate specification of power in the Module (Maximum Power, P_{max}), expressed in Watts, and measured at STC, excluding any specified positive tolerance.

Standard Test Conditions (STC).

① Air mass 1.5, ② Irradiance 1000W/m², ③ Cell Temperature 25°C

Warranty Start Date.

Jinko provides the Limited Warranty set forth herein commencing upon the earlier of one of the following dates:

- A. The date which is one hundred and eighty (180) days following the Module manufacture date, as indicated by the serial number[digit no. 7-11 (YYMDD)] starting from the left side of the serial number, with the letter corresponding to the month as indicated in the table below for such Module.

letter	A	B	C	D	E	F	G	H	J	K	L	M
month	1	2	3	4	5	6	7	8	9	10	11	12

- B. Delivery date of a Module to the original purchaser thereof.



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P_{1st year,%}•

P_{1st year,%} represents the warranted Actual Power Output of Modules at the end of the first year following the Warranty Start Date.

$$P_{1st\ year,\%} = 100\% * (1 - \text{First Year Degradation Rate})$$

P_{N year,%}•

P_{N year,%} represents the warranted Actual Power Output of Modules at the end of a year (N) after the first year following the Warranty Start Date until the end of the applicable Limited Power Warranty Period as specified at Table 1.

$$P_{N\ year,\%} = 100\% * (1 - (\text{First Year Degradation Rate} + \text{Annual Degradation Rate} * (N-1))),$$

With $N, 2 \leq N \leq \text{Limited Power Warranty Period}$

1.2 Limited Product Warranty

Beginning on the Warranty Start Date and for the Limited Product Warranty Period, Jinko warrants that the Module and its respective DC connectors and cables (hereinafter referred to as the "Products") will be free from material defects in workmanship which impair the performance of the Products. Material defects shall not include changes in appearance or normal wear and tear of the Products.

1.3 Limited Power Warranty

Beginning on Warranty Start Date and for the first year following the Warranty Start Date, Jinko warrants that the Degradation Rate of Modules shall not exceed the applicable First Year Degradation Rate; for each year after the first year, the Degradation Rate of Modules shall not exceed the applicable Annual Degradation Rate, as set forth at Table 1.

2. Warranty Claim and Remedies

2.1 Warranty Claim

- a) Customer shall bear the burden of establishing a breach of the Limited Product Warranty or Limited Power Warranty (collectively, "Warranties"), and if Customer believes that there has been a breach of the Warranties, Customer shall promptly and no later than thirty (30) days via the after-sales online platform at <https://cs.jinkosolar.com> after knowledge thereof, provide notice to Jinko setting forth the following evidentiary documents or information related to the claim:
- 1) Identifying information of the claimant;
 - 2) A detailed description of the claim;
 - 3) Supporting materials including photos of affected modules or testing reports;
 - 4) Serial number, types, and numbers of affected module;
 - 5) Evidence of purchase of the affected Module and Warranty Start Date;
 - 6) Initial installation location;
 - 7) Other supplementary information required by Jinko; and



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8) Upon request by Jinko, the actual Module(s) allegedly causing the breach.
In the event that Customer fails to notify Jinko and provide the relevant information of (1)-(8) as described above, Jinko is entitled to refuse to process the relevant claim without any liability.

- b) Jinko will review and evaluate alleged claims after receipt of the claim and full information as stipulated herein. If Jinko at its sole discretion considers it necessary, Jinko can request the Modules be shipped to the Independent Testing Lab for testing. In the event Customer returns the Modules without written consent from Jinko, the risks (including but not limited to damage and loss of the Modules) and expenses related to the Modules shall be borne by Customer.
- c) 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 2.1 (c)] 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. In all measurements of Actual Power Output, the effect of test uncertainty needs to be considered as per IEC 61215.
- d) Jinko shall first bear reasonable testing costs incurred by the Independent Testing Lab pursuant to Section 2.1(c) hereto, including but not limited to shipping, testing services, and insurance. However, Customer shall promptly upon receipt of notice indemnify Jinko for all such costs on a dollar-for-dollar basis in the event that 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.
- e) Notwithstanding anything to the contrary in this Limited Warranty, Jinko shall not be liable to the successors and permitted assigns of the Limited Warranty for the portion of warranty benefits that arising from the similar root cause and has already been processed and/or enjoyed prior to the transfer of this Limited Warranty. For the avoidance of doubt, the benefits of the successors and permitted assigns of the Limited Warranty shall exclude the portion claimed by the previous Customer.

2.2 Remedies for Claims

a) Remedies Option

In the event that the Module(s) breaches the Warranties, then Jinko shall, at its sole discretion, provide one of the following remedies:



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- 1) Repair the defective Modules. In such case, Jinko shall prepare the repair project plan and carry out the repair project for the affected modules; or
- 2) Replace the defective Modules. In such case, the replacement modules' Actual Power Output shall be no less than the Theoretical Minimum Residual Warranty Power Output of the replaced Module(s)
$$\text{Theoretical Minimum Residual Warranty Power Output} = \text{Nominal Power Output} * (1 - (\text{First Year Degradation Rate} + \text{Annual Degradation Rate} * (N-1)))$$

Note: year N, $0 \leq N \leq \text{Limited Power Warranty Period}$; or
- 3) Refund the **Residual Value** of the defective modules or refund the **Value Equivalent of the Output Gap** (Gap between the Theoretical Minimum Residual Warranty Power Output and the Actual Power Output of the defective Module(s))

$$\text{Residual Value} = \text{Current Price (price-per-watt)} * \text{Nominal Power Output} * (\text{Left-over Limited Power Warranty Period} / \text{Limited Power Warranty Period})$$

$$\text{Value Equivalent of Output Gap} = \text{Current Price (price-per-watt)} * (\text{Theoretical Minimum Residual Warranty Power Output} - \text{Actual Power Output})$$

The Current Price (price-per-watt) is determined by Jinko; or

- 4) Provide additional Module(s) to compensate for the power output loss for any Module which causes a breach of the Warranties.

b) Remedies Description

Unless otherwise agreed in writing, 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 2.2 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 2.2(b). For avoidance of doubt, it is expressly stated here that any costs incurred due to dismantling, repacking, installation or re-installation the Module(s) and other related expenses shall be borne by the Customer. 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 power output of the original Module at the time of supply or replacement, based on the warranted degradation rates set forth at Section 1 hereto. Notwithstanding the foregoing, if Jinko no longer supplies Modules meeting the foregoing criteria, then additional or replacement Modules provided under this Section 2.2(b) 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 2.2(b) shall not extend the term of any Warranties.

Unless otherwise agreed upon in the underlying purchase agreement, Customer shall dispose of out-of-use Module (s) in accordance with applicable regulations on electronic waste treatment and disposal at its own cost and the same shall not be reworked, re-sold or re-used



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in any way. If Jinko determines to retrieve such Modules, the ownership of same is deemed to belong to Jinko, and Jinko shall bear the transportation costs related with delivery of the Module(s) from their original place to the destination location designated by Jinko.

c) Exclusions

This Limited Warranty is subject to the exclusions set forth in this Section 2.2(c). The Warranties shall not apply to any Module or Products which have been:

- 1) Altered, repaired or modified without the prior written consent of Jinko or otherwise inconsistent with Jinko's written instructions; or
- 2) Used in a manner inconsistent with the version of Jinko Installation Manual available at <https://jinkosolar.eu> on the date the Module is manufactured; or
- 3) 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; or
- 4) 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; or
- 5) Subject to power surges, lightning, floods, fires, natural disasters and other force majeure or module damage due to war, tampering, vandalism, accidental breakage, or other events beyond Jinko's control, resulting in material damages to the Module; or
- 6) Installed on mobile platforms (other than single or dual-axis trackers) or in a marine environment; or
- 7) Subject to direct contact with corrosive agents or salt water, pest damage, or malfunctioning PV system components; or
- 8) Exposure to voltage in excess to the maximum system voltage or power surges; or
- 9) Use of the Products in such a manner as to infringe Jinko's or any third party's intellectual property rights (including but not limited to patents, trademarks, etc.).

The Warranties shall not apply to any Module (and/or Product if applicable) for which the labels thereon indicating type or serial number have been altered, removed or made illegible. The Warranties shall not apply to any Module and Product for which full and final payment has not been received by Jinko or for Modules which are purchased through unauthorized sales channels or for Modules which are not genuine and are found to be counterfeit.

The Warranties only apply to Modules (and/or Products, if applicable) that remain within the original sales region where the Modules were delivered under the original purchase agreement between Jinko and Customer. The Warranties shall not apply to any Module (and/or Product, if applicable) that has been relocated outside of the original sales region.

3. 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



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PERFORMANCE, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND IMPLIED WARRANTIES OF CUSTOM OR USAGE, ARISING 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.

4. 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.

5. 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 5.

6. 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.



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7. 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. 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.

8. 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.

Should Customer have any concerns or questions regarding this Limited Warranties, the Products, or the services provided by Jinko, please contact our aftersales department via email cs.eu@jinkosolar.com or cs.italy@jinkosolar.com.

[END OF LIMITED WARRANTY]



GARANȚIE LIMITATĂ REV.RO20240726- LINEAR-MODUL MONOFACIAL PENTRU UE

Jinko Solar Import and Export Co., Ltd. sau afiliații săi (denumite în continuare „Jinko”) oferă, în general, garanțiile stabilite aici cumpărătorului inițial și succesorilor săi și cesionaților săi (denumite în continuare „Client”) cu privire la oricărui modul solar fotovoltaic (denumit în continuare „Modul”) menționat aici vândut de Jinko în baza contractelor de cumpărare semnate la sau după 26 iulie 2024, sub rezerva termenilor și condițiilor din prezentul document (denumită în continuare „Garanție limitată”). Jinko și Clientul pot fi denumiți în continuare fiecare „Parte” și, în mod colectiv, „Părțile”.

Această garanție limitată se aplică numai modulelor vândute și/sau livrate în țările europene.

Tipuri de module acoperite de această garanție limitată						
Serie	Tipul modulului	Perioada limitată de garanție a produsului (ani)	Perioada de garanție limitată pentru putere (ani)	Rata de degradare a primului an	Degradarea anuală Rata	Pmin La Sfârșitul Garanție de putere Perioadă
Tiger Neo	JKMxxxN-66HL4M-(V) 12	30	1,00%	0,40%	87,40%	
Tiger Neo	JKMxxxN-54HL4R-(V) 15	30	1,00%	0,40%	87,40%	
Tiger Neo	JKMxxxN-54HL4R-B 25	30	1,00%	0,40%	87,40%	
Tiger Neo	JKMxxxN-72HL4-(V) 12	30	1,00%	0,40%	87,40%	
Tiger Neo	JKMxxxN-60HL4-(V) 12	30	1,00%	0,40%	87,40%	
Tiger Neo	JKMxxxN-54HL4-(V) 15	30	1,00%	0,40%	87,40%	
Tiger Neo	JKMxxxN-54HL4-B 25	30	1,00%	0,40%	87,40%	
Tiger Neo	JKMxxxN-78HL4-(V) 12	30	1,00%	0,40%	87,40%	
Tiger Pro	JKMxxxM-72HL4-(V) 12	25	2,00%	0,55%	84,80%	
Tiger Pro	JKMxxxM-60HL4-(V) 12	25	2,00%	0,55%	84,80%	
Tiger Pro	JKMxxxM-54HL4-(V) 15	25	2,00%	0,55%	84,80%	
Tigru de tip N	JKMxxxN-6RL3-(V) 15	30	1,00%	0,40%	87,40%	
Tigru de tip N	JKMxxxN-6RL3-B 25	30	1,00%	0,40%	87,40%	
Tigru de tip N	JKMxxxN-6TL3-(V) 20	30	1,00%	0,40%	87,40%	
Tigru de tip N	JKMxxxN-6TL3-B 25	30	1,00%	0,40%	87,40%	
Tigru tip P	JKMxxxM-7RL3-(V) 12	25	2,00%	0,55%	84,80%	

Tabelul 1. Tipuri de module acoperite de această garanție limitată



GARANȚIE LIMITATĂ REV.RO20240726- LINEAR-MODUL MONOFACIAL PENTRU UE

1. GARANȚIE LIMITATĂ

1.1 Definiții și descriere a tabelului

Putere reală de ieșire. Puterea reală de ieșire înseamnă puterea de ieșire a Modulului, exprimată în wați, măsurată la STC la un anumit moment de timp într-un an după data de începere a garanției, corectată pentru orice eroare de măsurare, conform IEC 61215.

Rata anuală de degradare. Pentru fiecare an după primul an de la Data de începere a garanției până la sfârșitul Perioadei de garanție limitată pentru putere aplicabilă, Jinko garantează că rata de degradare a modulelor nu va depăși rata anuală de degradare aplicabilă stabilită în Tabelul 1 aplicabilă pentru fiecare tip de modul.

Rata de degradare. Rata de degradare înseamnă orice cantitate pozitivă calculată în conformitate cu următoarea formulă, exprimată ca procent:

$$\text{Rata de degradare} = (\text{Puterea nominală de ieșire} - \text{Puterea de ieșire reală}) / \text{Puterea nominală de ieșire} \times 100\%$$

Rata de degradare a primului an. În primul an de la Data începerii garanției, rata maximă de degradare aplicabilă a modulelor, stabilită în Tabelul 1.

Putere nominală de ieșire. Puterea nominală de ieșire înseamnă specificația originală de pe plăcuța de identificare a puterii din modul (putere maximă, Pmax), exprimată în wați și măsurată la STC, excluzând orice toleranță pozitivă specificată.


Condiții standard de testare (STC). ① Masa de aer 1,5, ② Iradiere 1000W/m², ③ Temperatura celulei 25°C

Data de începere a garanției. Jinko oferă garanția limitată stabilită aici, începând cu una dintre următoarele date:

- O. Data care este la o sută optzeci (180) de zile de la data fabricării Modulului, așa cum este indicată de numărul de serie [cifra nr. 7-11 (an/lună/zi)] începând din partea stângă a numărului de serie, cu litera corespunzătoare lunii, așa cum este indicat în tabelul de mai jos pentru un astfel de Modul.

litera	A	B	C	D	E	F	G	H	J	K	L	M
lună	1	2	3	4	5	6	7	8	9	10	11	12

- B. Data livrării unui Modul către cumpărătorul inițial al acestuia.

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$P_{1st\ an, \%}$ · $P_{1st\ an, \%}$ reprezintă puterea reală de ieșire garantată a modulelor la sfârșitul primului an care urmează datei de începere a garanției.

$$P_{1st\ an, \%} = 100\% \cdot (1 - \text{Rata de degradare a primului an})$$

$P_{N\ an, \%}$ · $P_{N\ an, \%}$ reprezintă puterea reală de ieșire garantată a modulelor la sfârșitul unui an (N) după primul an care urmează datei de începere a garanției până la sfârșitul Perioadei de garanție a puterii limitate aplicabile, așa cum este specificat în Tabelul 1.

$$P_{N\ an, \%} = 100\% \cdot (1 - (\text{Rata de degradare a primului an} + \text{Rata anuală de degradare} \cdot (N-1))), \text{ cu } N, 2 \leq N \leq \text{Perioada de garanție limitată pentru putere}$$

1.2 Garanție limitată pentru produs

Începând cu Data de începere a garanției și pentru Perioada limitată de garanție a produsului, Jinko garantează că Modulul și conectorii și cablurile DC respective (denumite în continuare „Produse”) nu vor avea defecte materiale de manoperă care afectează performanța Produse. Defectele materiale nu vor include modificări ale aspectului sau uzura normală a Produselor.

1.3 Garanție limitată pentru putere

Începând cu Data de începere a garanției și pentru primul an care urmează datei de începere a garanției, Jinko garantează că rata de degradare a modulelor nu va depăși rata de degradare aplicabilă pentru primul an; pentru fiecare an după primul an, rata de degradare a modulelor nu va depăși rata anuală de degradare aplicabilă, așa cum este stabilită în tabelul 1.

2. Revendicare și remedii în garanție

2.1 Revendicare în garanție

- a) Clientul va avea sarcina de a stabili o încălcare a Garanției limitate pentru produs sau a garanției limitate pentru putere (colectiv, „Garanții”), iar dacă Clientul consideră că a existat o încălcare a garanțiilor, Clientul va trebui să dea prompt și nu mai târziu de treizeci (30) zile prin intermediul platformei online post-vânzare la <https://cs.jinkosolar.com>, după cunoaștință de acest lucru, transmiteți o notificare către Jinko care să prezinte următoarele documente probatorii sau informații legate de reclamație:

- 1) Informații de identificare ale reclamantului;
- 2) O descriere detaliată a revendicării;
- 3) Materiale suport, inclusiv fotografii ale modulelor afectate sau rapoarte de testare;
- 4) Numărul de serie, tipurile și numerele modulului afectat;
- 5) Dovada achiziționării Modulului afectat și Data de începere a garanției;
- 6) Locația de instalare inițială;
- 7) Alte informații suplimentare solicitate de Jinko; și



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8) La cererea lui Jinko, modulele reale care se presupune că au cauzat încălcarea. În cazul în care Clientul nu notifică Jinko și nu furnizează informațiile relevante de la (1)-(8) așa cum este descris mai sus, Jinko are dreptul de a refuza să proceseze reclamația relevantă fără nicio răspundere.

- b) Jinko va examina și evalua presupusele revendicări după primirea revendicării și a informațiilor complete, așa cum sunt stipulate aici. Dacă Jinko, la propria sa discreție, consideră că este necesar, Jinko poate solicita ca modulele să fie expediate la Laboratorul de testare independent pentru testare. În cazul în care Clientul returnează Modulele fără acordul scris al Jinko, riscurile (inclusiv, dar fără a se limita la deteriorarea și pierderea Modulilor) și cheltuielile legate de Module vor fi suportate de către Client.
- c) În ciuda oricăror dispoziții contrare din prezentul document, Jinko va avea dreptul, la discreția exclusivă a lui Jinko, prin notificarea scrisă către Client, să solicite ca orice încălcare a garanțiilor pretinsă de către Client să fie revizuită de TÜV Rheinland, TÜV SUD sau de un alt laborator de testare terț neutru selectat de Jinko și aprobată de Client, această aprobare să nu fie reținută sau amânată în mod nejustificat („Laborator de testare independent”). Toleranța de măsurare a puterii oricărui echipament de testare utilizat de orice laborator de testare independent în efectuarea testelor cerute de această secțiune 2.1 (c)] va fi dezvăluită în scris ambelor părți înainte de efectuarea oricăror astfel de teste și se va reflecta în rezultatele finale ale testelor. furnizate de Laboratorul Independent de Testare. Determinarea de către un Laborator de testare independent cu privire la existența unei încălcări va fi definitivă și concludentă în ceea ce privește aspectele acoperite de o astfel de determinare. În toate măsurătorile puterii reale de ieșire, efectul incertitudinii testului trebuie luat în considerare conform IEC 61215.
- d) Jinko va suporta mai întâi costurile rezonabile de testare suportate de Laboratorul Independent de Testare în conformitate cu Secțiunea 2.1(c) din prezentul document, inclusiv, dar fără a se limita la, transport, servicii de testare și asigurare. Cu toate acestea, Clientul va despăgubi prompt, după primirea notificării, Jinko pentru toate aceste costuri pe o bază dolar pentru dolar, în cazul în care Laboratorul de testare independent nu poate confirma o încălcare a garanțiilor sau, dacă nu a fost utilizat niciun Laborator de testare independent, în caz contrar, clientul nu poate stabili o încălcare a garanțiilor.
- e) Fără a aduce atingere oricăror dispoziții contrare din această garanție limitată, Jinko nu va fi răspunzător față de succesorii și cesionarii autorizați ai garanției limitate pentru partea din beneficiile garanției care decurg din cauza principală similară și care a fost deja procesată și/sau de care sa bucurat înainte de transferul acestei garanții limitate. Pentru a evita orice dubiu, beneficiile succesorilor și cesionaților autorizați ai garanției limitate vor exclude partea revendicată de clientul anterior.

2.2 Remedii pentru reclamații

a) Opțiunea de remedii

În cazul în care Modulul(ele) încalcă garanțiile, atunci Jinko va oferi, la discreția sa, una dintre următoarele remedii:



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- 1) Reparați modulele defecte. În acest caz, Jinko va pregăti planul proiectului de reparație și va realiza proiectul de reparație pentru modulele afectate; sau
- 2) Înlocuiți modulele defecte. În acest caz, puterea reală de ieșire a modulelor de înlocuire nu va fi mai mică decât puterea reziduală minimă teoretică de ieșire a modulelor înlocuite.

Putere reziduală minimă teoretică de garanție = Putere nominală de ieșire * (1 - (Rata de degradare în primul an + Rata de degradare anuală * (N-1)))

Notă: anul N, $0 \leq N \leq$ Perioada de garanție pentru putere limitată; sau 3) Rambursați valoarea reziduală a modulelor defecte sau rambursați echivalentul valorii decalajului de ieșire (diferența dintre puterea reziduală minimă teoretică de ieșire în garanție și puterea reală de ieșire a modulului (modulelor) defecte)

Valoare reziduală = Preț curent (preț-pe-watt) * Putere nominală de ieșire * (Perioada de garanție pentru putere limitată rămasă / Perioada de garanție pentru putere limitată)

Echivalentul valorii decalajului de ieșire = Prețul curent (preț-pe-watt) * (Puterea de ieșire minimă teoretică reziduală de garanție – Puterea de ieșire reală)

Prețul curent (preț-pe-watt) este determinat de Jinko; sau 4) Furnizați Modul(e) suplimentar(e) pentru a compensa pierderea de putere de ieșire pentru orice Modul care provoacă o încălcare a garanțiilor.

b) Descrierea remediilor

Cu excepția cazului în care sa convenit altfel în scris, modulele suplimentare, reparate sau înlocuite vor fi livrate la aceeași destinație și pe aceeași bază de livrare INCOTERMS 2020 în care Modulul original care a cauzat încălcarea garanțiilor a fost livrat conform contractului de cumpărare căruia i se aplică această garanție limitată. Modulele înlocuite primite de Jinko în conformitate cu Secțiunea 2.2 vor fi proprietatea exclusivă a Jinko. Jinko va fi singurul responsabil pentru toate costurile de transport suportate pentru îndeplinirea obligațiilor suplimentare de aprovizionare, reparație sau înlocuire în conformitate cu această Secțiune 2.2(b). Pentru a evita orice dubiu, aici se precizează în mod expres că orice costuri suportate ca urmare a dezmembrării, reambalării, instalării sau reinstalării Modulului(lor) și alte cheltuieli aferente vor fi suportate de către Client. Modulele suplimentare sau de înlocuire trebuie să fie de același tip și formă fizică ca și modulul original, compatibile electric cu modulul original și să aibă o ieșire electrică nu mai mică decât puterea de ieșire garantată a modulului original la momentul furnizării sau înlocuirii; pe baza ratelor de degradare garantate stabilite la secțiunea 1 a prezentului. Fără a aduce atingere celor de mai sus, dacă Jinko nu mai furnizează Module care îndeplinesc criteriile de mai sus, atunci Modulele suplimentare sau de înlocuire furnizate în conformitate cu această Secțiune 2.2(b) vor fi acele Module furnizate atunci de Jinko care îndeplinesc cel mai mult criteriile de mai sus. Efectuarea de către Jinko a oricărei reparații, înlocuire sau furnizare suplimentară în conformitate cu această Secțiune 2.2(b) nu va prelunge termenul niciunei garanții.

Cu excepția cazului în care s-a convenit altfel în contractul de cumpărare subiacent, Clientul va elimina Modulul (modulele) neutilizat(e) în conformitate cu reglementările aplicabile privind tratarea și eliminarea deșeurilor electronice pe cheltuiala proprie și acestea nu vor fi re prelucrate, revândute sau re folosit



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În orice fel. Dacă Jinko decide să recupereze astfel de Module, proprietatea asupra acestora este considerată a aparține Jinko, iar Jinko va suporta costurile de transport legate de livrarea Modulului(lor) de la locul lor inițial până la locația de destinație desemnată de Jinko.

c) Excluderile

Această garanție limitată este supusă excluderilor prevăzute în această Secțiune 2.2(c). Garanțiile nu se vor aplica niciunui Modul sau Produselor care au fost:

- 1) Modificat, reparat sau modificat fără acordul prealabil scris al Jinko sau în alt mod incompatibil cu instrucțiunile scrise ale Jinko; sau
- 2) Folosit într-o manieră incompatibilă cu versiunea manualului de instalare Jinko disponibilă la <https://jinkosolar.eu> la data fabricării Modulului; sau
- 3) Îndepărtat și reinstalat în orice locație, alta decât locația fizică în care a fost instalat inițial, în urma achiziției de către Client sau a primirii de la Jinko ca Modul de înlocuire; sau
- 4) Sub rezerva utilizării greșite, abuzului, neglijenței sau accidentului, cu excepția cazurilor cauzate de Jinko în timpul depozitării, transportului, manipulării, instalării, aplicării, utilizării sau service-ului; sau 5) Sub rezerva supratensiunii, fulgerelor, inundațiilor, incendiilor, dezastrelor naturale și a altor cazuri de forță majoră sau deteriorări ale modulelor din cauza războiului, falsificării, vandalismului, spargerii accidentale sau altor evenimente care nu pot fi controlate de Jinko, care au ca rezultat pagube materiale ale Modulului; sau
- 6) Instalat pe platforme mobile (altele decât trackerele cu o singură axă sau cu două axe) sau într-un mediu marin; sau
- 7) Supus contactului direct cu agenți corozivi sau cu apă sărată, daune dăunătoare sau defecțiuni ale componentelor sistemului fotovoltaic; sau
- 8) Expunerea la tensiune în exces la tensiunea maximă a sistemului sau supratensiuni de putere; sau 9) Utilizarea Produselor în așa fel încât să încalce drepturile de proprietate intelectuală ale Jinko sau ale oricărei terțe părți (inclusiv, dar fără a se limita la brevete, mărci comerciale etc.).

Garanțiile nu se vor aplica niciunui Modul (și/sau Produs, dacă este cazul) pentru care etichetele de pe acesta care indică tipul sau numărul de serie au fost modificate, îndepărtate sau făcute ilizibile. Garanțiile nu se vor aplica niciunui Modul și Produs pentru care Jinko nu a primit plata integrală și finală sau pentru Modulele care sunt achiziționate prin canale de vânzare neautorizate sau pentru Modulele care nu sunt autentice și sunt considerate a fi contrafăcute.

Garanțiile se aplică numai Modulelor (și/sau Produselor, dacă este cazul) care rămân în regiunea de vânzare inițială în care Modulele au fost livrate conform contractului de cumpărare inițial dintre Jinko și Client. Garanțiile nu se vor aplica niciunui Modul (și/sau Produs, dacă este cazul) care a fost mutat în afara regiunii de vânzare inițiale.

3. LIMITE DE RĂSPUNDERE

FĂRĂ NECESAR ORICE CONTRA ÎN ACEASTA GARANȚIE LIMITATĂ, CU EXCEPȚIA PREVĂZUTĂILOR EXPRESE ÎN ACEST, JINKO NU OFERĂ GARANȚII, GARANȚII SAU CONDIȚII, EXPRESE SAU IMPLICITE, DECORATE DIN MODULE ȘI RESPONSABILITĂȚI IMPLICATE DE RESPONSABILITĂȚI JINKO GARANȚII DE



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PERFORMANȚĂ, VANTABILITATE SAU ADECVENȚĂ PENTRU UN ANUMIT SCOP ȘI GARANȚII IMPLICITE DE PERSONALIZARE SAU UTILIZARE, DECORATE DIN SAU RELAȚIONARE LA MODULE. REMEDIILE PENTRU ÎNCĂLCAREA ACESTEI GARANȚII SUNT SINGURILE ȘI EXCLUSIVE REMEDIURI PENTRU ÎNCĂLCAREA GARANȚIILOR SAU LEGATE DE ORICE ÎNCĂLCARE A GARANȚIILOR. JINKO NU VA FI RESPONSABIL ÎN NICIO CAZ ÎN ACEASTĂ GARANȚIE PENTRU ANALIZA PERFORMANȚEI, INSPECȚIE, DIAGNOSTIC, DEMONTARE, VAMĂ, TAXE DE IMPORT, TAXE DE EXPORT, TAXE, COSTURI DE REINSTALARE, SPECIALE, INDIRECTE, INCIDENTALE, ADMINISTRĂRI PUBLICE. Orice, INCLUSIV PIERDERI SAU DAUNE CAUZATE DIN MOTIVELE PIERDEREI UTILIZĂRII, PIERDEREA PROFITURILOR SAU VENITURILOR, COSITURI DE DOBÂNZI (CU EXCEPȚIA CĂ PREVAZULUI EXPRES ÎN PREZENTUL ACEST), PIERDERE A CAPACITĂȚII DE OBILIERE, COST CAPITAL SAU RECLAMAȚII PRIVIND PREJUDICIILE CLIEȚILOR, CU RESULTABILITATE PENTRU ÎNCĂLCAREA CONTRACTULUI, RĂSPUNDEREA DELICITĂȚII (INCLUSIVELE NEGLIGENȚEI), RĂSPUNDEREA STRICTĂ, PRIN APLICAREA LEGII SAU ÎN ORICE ALT MOD. CU EXCEPȚIA PENTRU ACESTE PREVĂZUTĂ ÎN ACEASTĂ GARANȚIE LIMITATĂ, JINKO NU VA FI NICIO RESPONSABILITATE SAU RESPONSABILITATE PENTRU DAUNE SAU RĂNIRE A PERSOANELOR SAU A PROPRIETĂȚII SAU PENTRU ALTE PIERDERI SAU RĂNIRE REZULTATE DIN ORICE CAUZA ORIENTATĂ A GARANTIEI LIMITATE.

4. CESIUNEA


În ciuda oricăror dispoziții contrare din prezentul document, această garanție limitată este în beneficiul unic și exclusiv al Clientului și nu există terți beneficiari ai acesteia; cu condiția, totuși, sub rezerva notificării scrise a Jinko și a primirii de către Jinko a plății integrale și finale pentru Module, întreaga garanție limitată poate fi atribuită în totalitate, dar nu parțial, oricărei persoane sau entități. Orice cesionar autorizat al acestei garanții limitate va executa acele acorduri care pot fi solicitate în mod rezonabil de Jinko pentru a confirma aplicabilitatea oricărui termen din prezentul document ca o condiție pentru cesiune.

5. LEGE ȘI FORUM

Orice dispută legată de sau care decurge din această garanție limitată, inclusiv, fără limitare, orice întrebare privind existența, valabilitatea, încălcarea sau încetarea acesteia, va fi menționată și soluționată în cele din urmă în conformitate cu clauzele legii în vigoare și procedurile de soluționare a litigiilor din contractul de cumpărare dintre cumpărătorul inițial și Jinko. Ca o condiție a oricărei obligații a Jinko în temeiul prezentului, Jinko poate cere oricărui Client care dorește să aplice această Garanție Limitată să execute acele acorduri suplimentare care ar putea fi necesare în mod rezonabil pentru a aplica termenii acestei Secțiuni 5.

6. CLAUZĂ DE FUNZIONARE

Această garanție limitată stabilește întregul acord și înțelegerea părților referitoare la subiectul prezentului document și înlocuiește toate discuțiile, înțelegerile și acordurile anterioare sau contemporane, orale sau scrise, între acestea referitoare la subiectul prezentului.

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7. DIVISIBILITATE

În cazul în care una sau mai multe prevederi ale acestei garanții limitate sunt considerate inaplicabile conform legislației în vigoare, părțile convin să renegocieze această prevedere cu bună-credință. În cazul în care părțile nu pot ajunge la o înlocuire reciproc acceptabilă și aplicabilă pentru o astfel de prevedere, atunci (a) o astfel de prevedere va fi exclusă din această garanție limitată, (b) restul acestei garanții limitate va fi interpretat ca și cum o astfel de prevedere ar fi așa. excluse și (c) soldul acestei garanții limitate va fi aplicabil în conformitate cu termenii acesteia.

8. DIVERSE

Termenii acestei garanții limitate sunt condiționate de încorporarea lor într-un acord contractual dintre Jinko și client și, atunci când sunt încorporați într-un astfel de acord contractual, această garanție limitată va fi supusă termenilor acestora și poate fi modificată atunci când este încorporată în acesta. Jinko își rezervă dreptul de a modifica sau actualiza această garanție limitată în orice moment, cu sau fără notificare.

În cazul în care Clientul are nelămuriri sau întrebări cu privire la această garanție limitată, produsele sau serviciile furnizate de Jinko, vă rugăm să contactați departamentul nostru post-vânzare prin e-mail cs.eu@jinkosolar.com sau cs.italy@jinkosolar.com.

[SFÂRȘITUL GARANȚIEI LIMITATE]