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Foundry Works Solar Technical Cut Sheets

ATTACHEMENTS BELOW



THE MOST DEPENDABLE SOLAR BRAND

EAGLE 72HM G5b

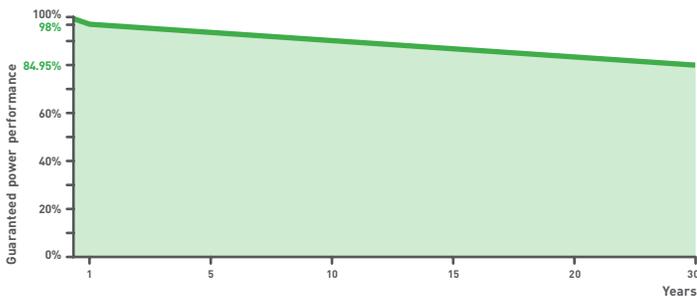
515-535 WATT • MONO HALF CELL BIFACIAL

Positive power tolerance of 0~+3%

- NYSE-listed since 2010, Bloomberg Tier 1 manufacturer
- Best-selling module globally for last 4 years
- Top performance in the strictest 3rd party labs
- 99.9% on-time delivery to the installer
- Automated manufacturing utilizing artificial intelligence
- Vertically integrated, tight controls on quality
- Premium solar panel factories in USA and Malaysia

LINEAR PERFORMANCE WARRANTY

30-Year Performance Warranty



- ISO9001:2015 Quality Standards
- ISO14001:2015 Environmental Standards
- IEC61215, IEC61730 certified products
- ISO45001: 2018 Occupational Health & Safety Standards
- UL61730 certification pending



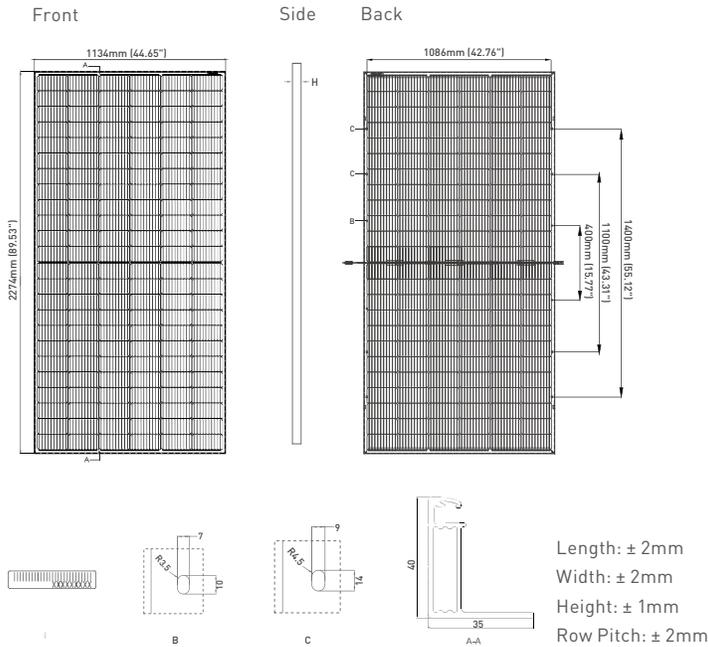
*Certifications Pending



KEY FEATURES

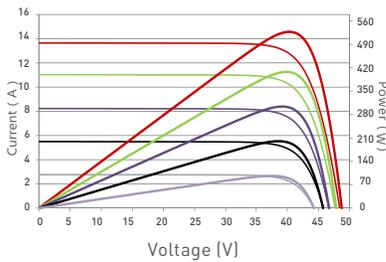
- Multi Busbar Half Cell Technology**
High efficiency mono half cut solar cells deliver high power in a small footprint.
- Bifacial Power Gain**
Bifacial cell architecture allows backside bonus and more lifetime power yield.
- Designed for Long Life**
Uses the same DuPont protective film as the Space Station, Mars Lander, and jetliners. 30-year warranty.
- Shade Tolerant**
Twin array design allows continued performance even with shading by trees or debris.
- Power Boost in Cloudy Conditions**
A special film diffuses light, boosting performance even with shading by trees or debris.
- Protected Against All Environments**
Certified to withstand humidity, heat, rain, marine environments, wind, hailstorms, and packed snow.

ENGINEERING DRAWINGS

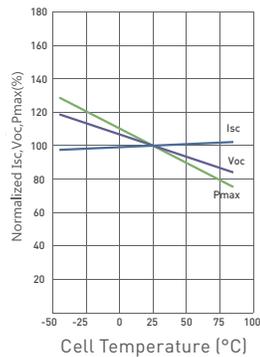


ELECTRICAL PERFORMANCE & TEMPERATURE DEPENDENCE

Current-Voltage & Power-Voltage Curves (520W)



Temperature Dependence of I_{sc} , V_{oc} , P_{max}



ELECTRICAL CHARACTERISTICS

Module Type	JKM515M-72HL4-TV		JKM520M-72HL4-TV		JKM525M-72HL4-TV		JKM530M-72HL4-TV		JKM535M-72HL4-TV	
	STC	NOCT								
Maximum Power (P_{max})	515Wp	383Wp	520Wp	387Wp	525Wp	391Wp	530Wp	394Wp	535Wp	398Wp
Maximum Power Voltage (V_{mp})	40.40V	37.49V	40.50V	37.60V	40.61V	37.74V	40.71V	37.88V	40.81V	37.98V
Maximum Power Current (I_{mp})	12.75A	10.22A	12.84A	10.29A	12.93A	10.35A	13.02A	10.41A	13.11A	10.48A
Open-circuit Voltage (V_{oc})	49.12V	46.36V	49.20V	46.44V	49.27V	46.50V	49.35V	46.58V	49.42V	46.65V
Short-circuit Current (I_{sc})	13.47A	10.88A	13.54A	10.94A	13.64A	11.02A	13.71A	11.07A	13.79A	11.14A
Module Efficiency STC (%)	19.97%		20.17%		20.36%		20.55%		20.75%	

*STC: ☀ Irradiance $1000\text{W}/\text{m}^2$
NOCT: ☀ Irradiance $800\text{W}/\text{m}^2$

🌡 Cell Temperature 25°C
🌡 Ambient Temperature 20°C

☁ AM = 1.5
☁ AM = 1.5
🌀 Wind Speed 1m/s

*Power measurement tolerance: $\pm 3\%$

The company reserves the final right for explanation on any of the information presented hereby. JKM515-535M-72HL4-TV-D2-US

BUILDING YOUR TRUST IN SOLAR. JINKOSOLAR.US

Jinko Solar

MECHANICAL CHARACTERISTICS

Cells	Mono Diamond Cell
No. of Half Cells	144 (2x72)
Dimensions	2274×1134×40mm (89.53×44.65×1.57in)
Weight	29.2kg (64.37lbs)
Front Glass	3.2mm, Anti-Reflection Coating High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP68 Rated
Output Cables	12 AWG, 1400mm (55.12in) or Customized Length
Fire Type	Type 1
Pressure Rating	5400Pa (Snow) & 2400Pa (Wind)

TEMPERATURE CHARACTERISTICS

Temperature Coefficients of P_{max}	-0.35%/°C
Temperature Coefficients of V_{oc}	-0.28%/°C
Temperature Coefficients of I_{sc}	0.048%/°C
Nominal Operating Cell Temperature (NOCT)	45±2°C
Refer. Bifacial Factor	70±5%

MAXIMUM RATINGS

Operating Temperature (°C)	-40°C~+85°C
Maximum System Voltage	1500VDC (UL and IEC)
Maximum Series Fuse Rating	30A

PACKAGING CONFIGURATION

(Two pallets = One stack)
27pcs/pallets, 54pcs/stack, 540pcs/40 HQ Container

BIFACIAL OUTPUT-REAR SIDE POWER GAIN

5%	Maximum Power (P_{max})	541Wp	546Wp	551Wp	557Wp	562Wp
	Module Efficiency (%)	20.97%	21.17%	21.38%	21.58%	21.78%
15%	Maximum Power (P_{max})	592Wp	598Wp	604Wp	610Wp	615Wp
	Module Efficiency (%)	22.97%	23.19%	23.41%	23.64%	23.86%
25%	Maximum Power (P_{max})	644Wp	650Wp	656Wp	663Wp	669Wp
	Module Efficiency (%)	24.96%	25.21%	25.45%	25.69%	25.93%

Hi-MO 5

LR5-72HBD 520~545M

- Based on M10-182mm wafer, best choice for ultra-large power plants
- Advanced module technology delivers superior module efficiency
 - M10 Gallium-doped Wafer
 - Smart Soldering
 - 9-busbar Half-cut Cell
- Globally validated bifacial energy yield
- High module quality ensures long-term reliability

12

12-year Warranty for Materials and Processing

30

30-year Warranty for Extra Linear Power Output

Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO 9001:2008: ISO Quality Management System

ISO 14001:2004: ISO Environment Management System

TS62941: Guideline for module design qualification and type approval

OHSAS 18001: 2007 Occupational Health and Safety

LONGI



21.3%
MAX MODULE
EFFICIENCY

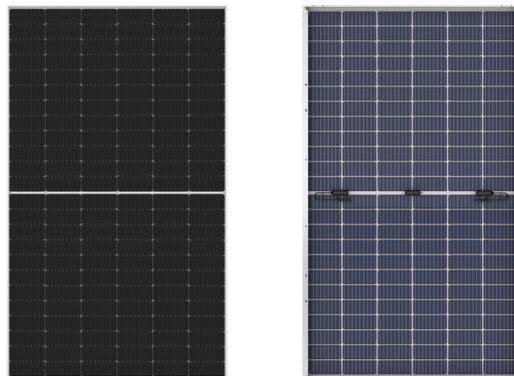
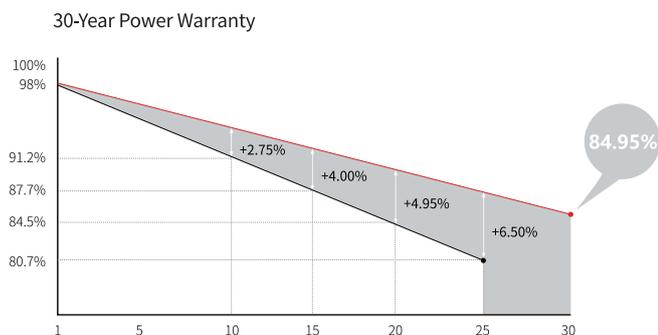
0~+5W
POWER
TOLERANCE

<2%
FIRST YEAR
POWER DEGRADATION

0.45%
YEAR 2-30
POWER DEGRADATION

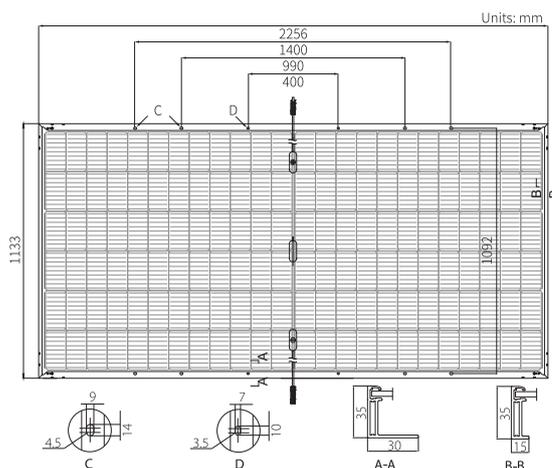
HALF-CELL
Lower operating temperature

Additional Value



Mechanical Parameters

Cell Orientation	144 (6×24)
Junction Box	IP68, three diodes
Output Cable	4mm ² , positive 400 / negative 200mm length can be customized
Glass	Dual glass, 2.0mm coated tempered glass
Frame	Anodized aluminum alloy frame
Weight	32.3kg
Dimension	2256×1133×35mm
Packaging	31pcs per pallet / 155pcs per 20' GP / 558pcs per 40' HC



Electrical Characteristics

STC : AM1.5 1000W/m² 25°C Test uncertainty for Pmax: ±3%

	520	525	530	535	540	545
Power Class	520	525	530	535	540	545
Maximum Power (Pmax/W)	520	525	530	535	540	545
Open Circuit Voltage (Voc/V)	48.90	49.05	49.20	49.35	49.50	49.65
Short Circuit Current (Isc/A)	13.57	13.65	13.71	13.78	13.85	13.92
Voltage at Maximum Power (Vmp/V)	41.05	41.20	41.35	41.50	41.65	41.80
Current at Maximum Power (Imp/A)	12.67	12.75	12.82	12.90	12.97	13.04
Module Efficiency(%)	20.3	20.5	20.7	20.9	21.1	21.3

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ +5 W
Voc and Isc Tolerance	±3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	30A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Fire Rating	UL type 29
Bifaciality	70±5%

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	-0.284%/°C
Temperature Coefficient of Pmax	-0.350%/°C

Hi-MO 5

LR5-72HBD 540~565M

- Based on M10-182mm wafer, best choice for ultra-large power plants
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 - M10 Gallium-doped Wafer
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OHSAS 18001: 2007 Occupational Health and Safety

LONGI



22.1%
MAX MODULE
EFFICIENCY

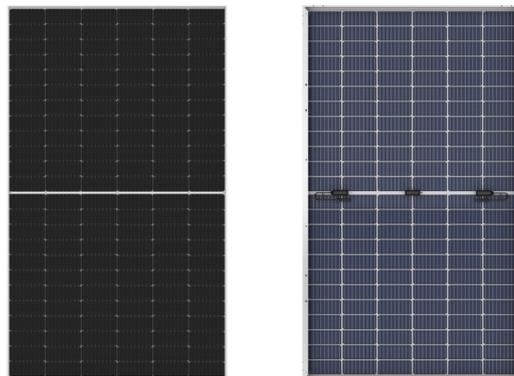
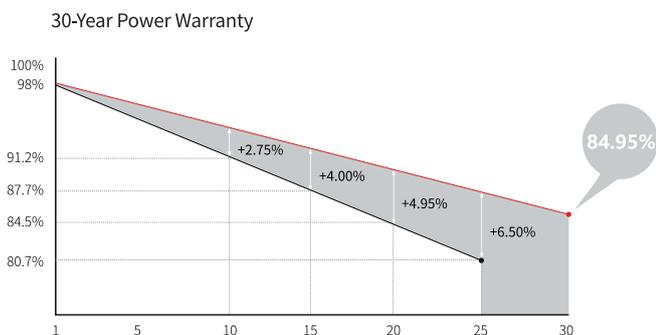
0~+5W
POWER
TOLERANCE

<2%
FIRST YEAR
POWER DEGRADATION

0.45%
YEAR 2-30
POWER DEGRADATION

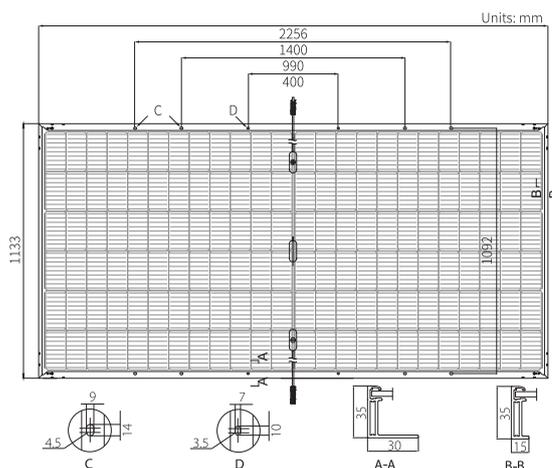
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Cell Orientation	144 (6×24)
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Frame	Anodized aluminum alloy frame
Weight	32.3kg
Dimension	2256×1133×35mm
Packaging	31pcs per pallet / 155pcs per 20' GP / 558pcs per 40' HC



Electrical Characteristics

STC : AM1.5 1000W/m² 25°C Test uncertainty for Pmax: ±3%

	540	545	550	555	560	565
Power Class	540	545	550	555	560	565
Maximum Power (Pmax/W)	540	545	550	555	560	565
Open Circuit Voltage (Voc/V)	49.50	49.65	49.80	49.95	50.10	50.25
Short Circuit Current (Isc/A)	13.85	13.92	13.98	14.04	14.10	14.16
Voltage at Maximum Power (Vmp/V)	41.65	41.80	41.95	42.10	42.25	42.40
Current at Maximum Power (Imp/A)	12.97	13.04	13.12	13.19	13.26	13.33
Module Efficiency(%)	21.1	21.3	21.5	21.7	21.9	22.1

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ +5 W
Voc and Isc Tolerance	±3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	30A
Nominal Operating Cell Temperature	45±2°C
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Solar Ware Ninja™

TMEiC
We drive industry

Multiple Configurations for Maximum Flexibility

TMEiC's Solar Ware Ninja is the latest evolution of the highly successful Solar Ware family of inverters, joining over 20GW of TMEiC's globally installed photovoltaic inverters. Continuing the legacy of high efficiency, cutting-edge features, and unmatched reliability, the new Ninja modular inverter system is the culmination of input from utilities, developers, and technicians.

The Ninja is a global product, performing the duties of both generation and energy storage. The modular system introduces multiple layers of flexibility to allow designers an almost unlimited number of options for every project. The advanced controls system is packed with features to meet not only today's smart inverter requirements, but also new requirements as they are introduced. Like the award-winning Samurai series of inverters, the Ninja utilizes the same highly reliable IGBT based power conversion system.



Customizable Block

Up to 6 Ninja units on the same skid. Able to combine PV and ESS inverters in the same lineup. A skid controller will manage output of the Ninja power station.

- Fully Modular design means:
 - Completely independent inverters for increased availability
 - Individual MPPT for greater energy yield
 - Latest generation of Smart Inverter controls platform
 - Multiple output options with various MPPT ranges
- DC Zone monitoring is standard
- UL or IEC certified global design
- PV or Energy Storage (bi-directional)
- Outdoor rated enclosure

TMEiC is Bankable

- Stable, with multi billion \$USD revenue
- Diversified, with decades of power electronics experience in a variety of heavy industries, including metals, oil & gas, mining, and container cranes industries
- Manufacturing in the US and several other locations

TMEiC is Reliable

- Over 20GW of PV and ESS inverters globally
- Own exclusive use of Mitsubishi Electric's 3 level NPS technology
- Industry leading fleet availability

TMEiC is Support

- Award winning service
- 24/7 US based hot line
- Over 30 years PV inverter manufacturing and R&D experience
- Comprehensive customer training programs
- Authorized Service Provider program available

		PV-PCS			ESS-PCS		
Type		PVU-L0800GR	PVU-L0840GR	PVU-L0880GR	BSU-L0640GR	BSU-L0800GR	BSU-L0840GR
Output side (AC)	Rated Power@25°C	800kW	840kW	880kW	640kW	800kW	840kW
	Rated Power@50°C	730kW	765kW	800kW	550kW	730kW	765kW
	Rated Voltage	600V +10%, -12%	630V +10%, -12%	660V +10%, -12%	480VAC	600VAC	630VAC
	Rated Frequency	50Hz / 60Hz (+0.5Hz, -0.7Hz)					
	Rated Power Factor	>0.99					
	Reactive Capability	±421 kVAR	±442 kVAR	±464 kVAR	±448 kVAR	±560 kVAR	±588 kVAR
	Rated Current	702 Arms @50 °C					
	Maxium Current	770 Arms @25 °C					
	Maximum Efficiency	98.72%*	98.72%	98.72%*	98.72%*	98.72%*	98.72%*
	CEC Efficiency	98%*	98%	98%*	98%*	98%*	98%*
Input side (DC)	Maximum Voltage	1500 Vdc					
	MPPT Operation Range	875-1300VDC	915-1300VDC	960-1300VDC	710-1100VDC	875-1300VDC	915-1300VDC
Environ. Conditions	Ingress Protection Ratings	IP54 / NEMA3R					
	Installation	Outdoor					
	Ambient Temperature Range	-25° to 50°C					
	Maximum Altitude	>2000 m power derating (Max. 4000m)					
Protective Functions	Input (DC) Side	DC Protection: Input Fuses, Ground Fault Detection, DC Reverse Current, Over Voltage, Over Current					
	Grid (AC) Side	AC Protection: Disconnect Switch and Fuse, Anti-islanding, Over/Under Voltage, Over/Under Frequency, Over Current					
	Grid Assistance	Reactive/Active Power Control, Power Factor Control, Fault Ride Through (optional)					
Harmonic Distortion of AC Current	≤ 3% THD (at rated power)			≤ 5% THD (at rated power)			
Communication	Modbus/TCP						
Fault Analysis	Fault Event Log, Waveform Acquisition via memory card						
Compliance	UL1741, UL174SA / IEE1547 / NEC2017 / IEC62109-1,2 / IEC61000-6-2,4 / IEC61727, IEC62116 / IEC61400, BDEW / IEC61683 / IEC60068						
Cooling Method	Heat Pipes and Forced Air Cooling						
Number of Inputs	Standard 6 inputs for PV (maximum 8 per inverter)			1 per Inverter			
Standard Control Power Supply	Control Power Supply from Inverter output and Capacitor backup circuit (3 sec. compensation)						
Short Circuit Withstand Current	AC side – 65kA; DC side – 30kA			AC side – 65kA; DC side – 100kA			
Weight	<1000kgs						
Dimensions (H x W x D)	1100 X 1100 X 1900 mm (L x W x H)						
Floor Space	1875.5 sq. in. (1.21 m ²)						
Color	Cabinet: Munsell N7.0, Roof: Munsell N4.5						

Note: Standard configuration not limited configuration. Contact TMEIC for detailed information.

*Preliminary specification

WWW.TMEIC.COM