WA7D SOLAR（Shandong)New Energy Co.,L

WA7D SOLAR（Shandong)New Energy Co.,LTD

莱德森（Shandong)新能源有限公司

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WA7D SOLAR

QUALIFICATION CERTIFICATION

资质认证

WA7D SOLAR products undergo five quality inspection processes including EL testing, power testing, and appearance testing. They are regularly submitted to world-leading laboratory institutions such as TUV and DEKRA for testing, and strictly comply with a series of internationally recognized quality and environmental management standards. To ensure that our products reach world-class quality.

REDSUN products have passed TUV, CE, INMETRO, IEC, CB, DEKRA, IECEE and other international certifications, and have multiple utility model patents and software copyright certificates.

莱德森（山东）新能源所有产品都经过EL测试、功率测试、外观检测等五道质量检测工序，产品经过TUV,DEKRA等世界领先的实验室机构进行测试，严 格遵守一系列国际公认的质量和环境管理标准，以确保我们的产品达到世界一流的质量。

莱德森（山东）新能源获得TUV、CE、INMETRO、IEC、CB、DEKRA、IECEE、ISO等国内外多项认证。截至目前，累计获得8项实用新型专利和4项软件著作 权证书。

TUV

MCS

CB(IEC 61215)

CB(IEC 61730)

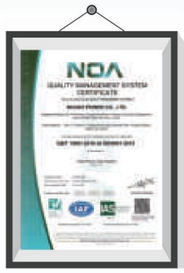
IEC (DEKRA)

Ammonia (TUV)

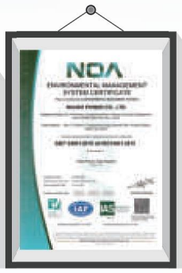
Salt Mist (TUV)

Sand Dust (TUV)

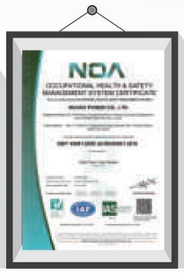
CSI



ISO9001
质量管理体系认证



ISO14001
环境管理体系认证



IS045001职业健康
安全管理体系认证

一种高效率
光伏组件

一种光伏板
清洗设备

一种光伏设备
太阳能板

一种全面屏的叠瓦
光伏组件

一种全面屏聚光
光伏组件

一种新能源
光伏发电板

一种新型排版
光伏组件

一种新型全面屏
光伏组件

全面屏光伏组件
控制管理平台

新能源发电
控制管理平台

新能源光伏控制系统

智能光伏发电
预警系统

PRODUCT DISPLAY
产品展示

166mm / 182mm / 210mm全系列

Relying on existing technology and production capabilities, REDSUN supplies photovoltaic modules with power ranging from 270W to 700W, including 166mm/182mm/210mm series, fully meeting user needs.

莱德森新能源依托现有的技术和生产能力，供应270W到700W区间功率光伏组件，包括166/182/210mm全系列，充 分满足用户所需。

PRODUCT FEATURES
产品特点

麟

MBB half-cut technology MBB 半片技术

Using MBB half-chip technology, it has better current collection performance, excellent hot spot resistance, lower operating temperature and low light response capability, which comprehensively improves the product's power output and power generation capacity.

采用MBB半片技术，具有更好的集电性能、优异的抗热斑性能、更低工作温度和弱光响应能力，全面提升产品功率输出和发电量。

Anti
PID

Anti-PID guarantee 抗PID保证

Through battery production technology optimization and material control, the probability of attenuation caused by PID phenomenon is minimized.

通过电池生产技术优化及材料管控，将PID现象造成的衰减几率降至最低。

Lower LCOE度电成本降低

Efficient component power and excellent industry size compatibility bring lower LCOE and BOS costs.

高效的组件功率和出色的行业尺寸兼容性，带来更低的度电成本和BOS成本。

Mechanical load enhancement 机械荷载增强

The modules have passed the 2400Pa wind load and 5400Pa snow load certification tests.

整体组件通过2400Pa风载荷及5400Pa雪载荷认证测试。

Quality control guarantee 质量控制保障

Strict quality control system, through TUV, CE, I EC, INMETRO and other international certifications, ensure product safety and reliability.

严格的质量控制体系，通过TUV、CE、IEC、INMETRO等国际认证，确保产品安全可靠。

Wider application环境适用广泛

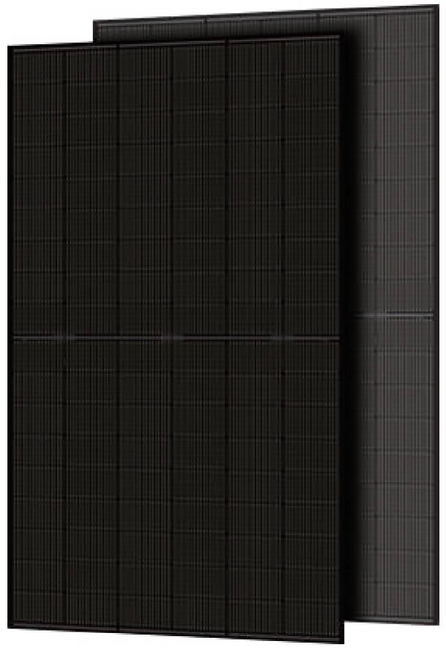
Salt spray tolerance and ammonia corrosion resistance test, widely applicable to various harsh environments.

通过盐雾耐受性、抗氨气腐蚀测试，广泛适用于各种恶劣的环境。

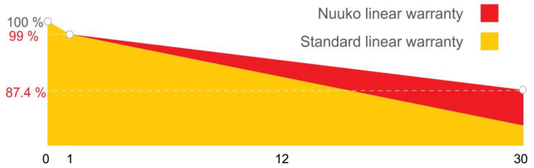
NKM-108 N-type (182mm Cell)

415-435 Watt

FULL BLACK BIFACIAL MODULE



Industry-leading Warranty based on nominal power



* 0.4% Annual Degradation over 30 Years
* 12 Years Product Warranty
* 30 Years Linear Power Warranty

Features

SMBB Technology

Better light trapping and current collection to improvemod-ule power output and reliability.

Hot 2.0 Technology

The N-type module with Hot 2.0 technology has betterreliability and lower LID/LETID.

Excellent weak light performance

More power output in weak light condition, such as cloudy, morning and sunset

Extended wind and snow load tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal) *

PID Resistance

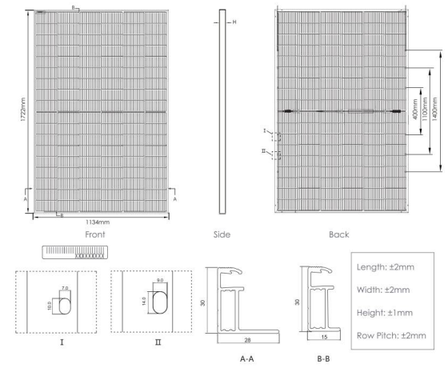
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Lower LCOE

Higher bifaciality, higher power output and lower BOS cost

MECHANICAL SPECIFICATIONS

Cell Type	N TOPCon Monocrystalline
Cell Dimensions	182*182mm
Cell Arrangement	108 (6*18)
Weight	24.5kg
Module Dimensions	1722*1134*30mm
Cable Length	Portrait 300mm/Landscape 1200mm/Customized
Cable Cross Section Size	TUV: 4mm² /UL: 12AWG
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	36pcs/pallet, 936pcs/40hq
Frame	Anodized Aluminium Alloy
Junction Box	IP68



ELECTRICAL SPECIFICATIONS

Module Type	NKM415N-108BDM10		NKM420N-108BDM10		NKM425N-108BDM10		NKM430N-108BDM10		NKM435N-108BDM10	
Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Rated output (Pmp/Wp)	415	315	420	318	425	322	430	326	435	330
Maximum Power Voltage(Vmpp/V)	31.7	29.8	31.9	30.0	32.1	30.2	32.3	30.3	32.5	30.5
Maximum Power Current(Impp/A)	13.10	10.56	13.17	10.62	13.24	10.67	13.32	10.74	13.39	10.82
Open Circuit Voltage(Voc/V)	37.7	36.0	37.9	36.2	38.1	36.4	38.3	36.6	38.4	36.8
Short Circuit Current(Isc/A)	13.91	11.22	13.98	11.27	14.05	11.33	14.12	11.38	14.18	11.44
Module efficiency(%)	21.3%		21.5%		21.8%		22.0%		22.3%	
Power Tolerance (W)	0~+5		0~+5		0~+5		0~+5		0~+5	

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5 NMOT: Irradiance at 800W/m2, Ambient Temperatue 20°C, Air Mass AM1.5, Wind Speed 1m/s

Electrical Characteristics with Different Rearside Power Gain (Reference to 420 W Front)

Pmax/W	441	462	483	504	525
Vmpp/V	31.9	31.9	31.9	31.9	31.9
Impp/A	13.83	14.49	15.15	15.80	16.46
Voc/V	37.9	37.9	37.9	37.9	37.9
Isc/A	14.68	15.38	16.08	16.78	17.48
Pmax gain	5%	10%	15%	20%	25%

MAXIMUM RATINGS

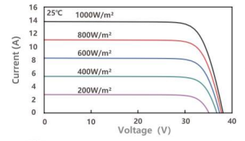
Maximum System Voltage	1500V DC (IEC)
Operating Temperature	-40°C ~+85°C
Maximun Series Fuse	30A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1Ω
Safety Class	II
Resistance	≥100MΩ
Connector	T01/LJQ-3-CSY/MC4/MC4-EVO2
Backside Output Ratio* Under STC: Backside Output Ratio = Pmax(rear)/Pmax(front)	RO%

TEMPERATURE CHARACTERISTICS

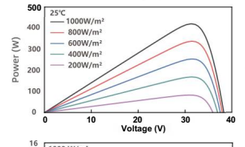
NMOT Temperature	42°C±2°C
Temprature Coefficient (Pmax)	-0.30%/°C
Temprature Coefficient (Voc)	-0.25%/°C
Temprature Coefficient (Isc)	0.045%/°C

CURVE & TEMPERATURE DEPENDENCE

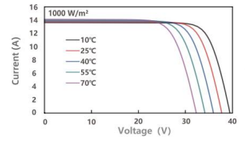
NKM420N-108BDM10



I-V Characteristics
At Different Irradiations



P-V Characteristics
At Different Irradiations



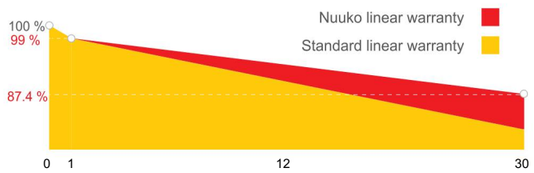
I-V Characteristics
At Different Temperatures

NKM-108 N-type (182mm Cell)

435-460 Watt

MONOFACIAL MODULE

Industry-leading Warranty based on nominal power



* 0.4% Annual Degradation over 30 Years
* 12 Years Product Warranty
* 30 Years Linear Power Warranty

Features

SMBB Technology

Better light trapping and current collection to improvemod-ule power output and reliability.

Hot 2.0 Technology

The N-type module with Hot 2.0 technology has betterreliability and lower LID/LETID.

Excellent weak light performance

More power output in weak light condition, such as cloudy, morning and sunset

Extended wind and snow load tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal) *

PID Resistance

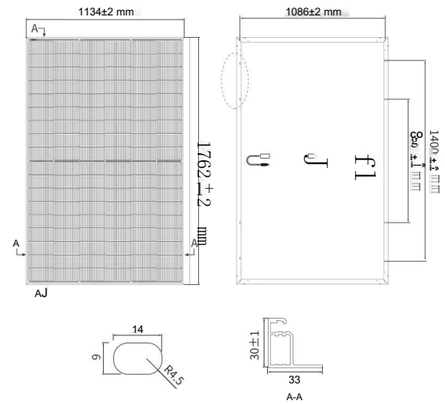
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Lower LCOE

Higher bifaciality, higher power output and lower BOS cost

MECHANICAL SPECIFICATIONS

Cell Type	N type Mono-crystalline
Cell Dimensions	182*182mm
Cell Arrangement	108 (54*2)
Weight	21kg
Module Dimensions	1762*1134*30mm
Cable Length	Portrait 300mm/Landscape 1200mm/Customized
Cable Cross Section Size	TUV: 4mm² /UL: 12AWG
Front Glass	3.2mm AR Coating Tempered Glass High Transmission, Low Iron, Tempered Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	37pcs/carton, 962pcs/40hq
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated



ELECTRICAL SPECIFICATIONS

Module Type	NKM435N-108M10	NKM440N-108M10	NKM445N-108M10	NKM450N-108M10	NKM455N-108M10	NKM460N-108M10
Rated output (Pmp/Wp)	435	440	445	450	455	460
Maximum Power Voltage(Vmpp/V)	32.59	32.81	33.02	33.21	33.41	33.60
Maximum Power Current(Impp/A)	1335	13.41	13.48	13.55	13.62	13.69
Open Circuit Voltage(Voc/V)	39.16	39.38	39.59	39.78	39.98	40.17
Short Circuit Current(Isc/A)	13.80	13.86	13.93	14.00	14.07	14.14
Module efficiency(%)	21.77%	22.02%	22.27%	22.52%	22.77%	23.02%
Power Tolerance (W)	0~+5	0~+5	0~+5	0~+5	0~+5	0~+5

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM 1.5 NMOT: Irradiance at 800W/m2, Ambient Temperatue 20°C, Air Mass AM 1.5, Wind Speed 1m/s

MAXIMUM RATINGS

Maximum System Voltage	1000V/1500V DC (IEC)
Operating Temperature	-40°C ~ +85°C
Maximun Series Fuse	25A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1 Q
Safety Class	II
Resistance	≥100MQ

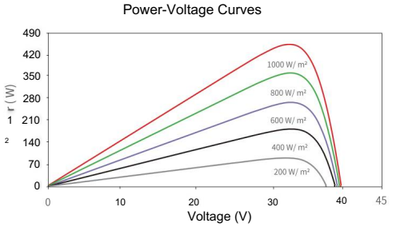
TEMPERATURE CHARACTERISTICS

NMOT Temperature	45°C±2°C
Temprature Coefficient (Pmax)	-0.30%/°C
Temprature Coefficient (Voc)	-0.25%/°C
Temprature Coefficient (Isc)	0.046%/°C

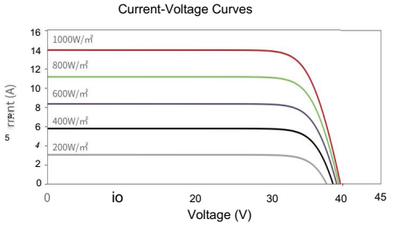
CURVE & TEMPERATURE DEPENDENCE

NKM450N-108M10

Power-Voltage Curves



Current-Voltage Curves

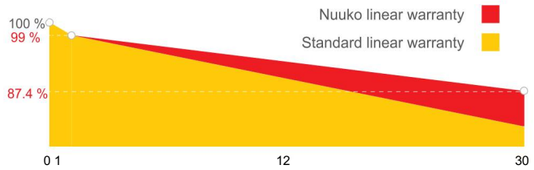


NKM-120 N-type (182mm Cell)

465-485 Watt

BIFACIAL MODULE

Industry-leading Warranty based on nominal power



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* 12 Years Product Warranty
* 30 Years Linear Power Warranty

Features

SMBB Technology

Better light trapping and current collection to improvemod-ule power output and reliability.

Hot 2.0 Technology

The N-type module with Hot 2.0 technology has betterreliability and lower LID/LETID.

Excellent weak light performance

More power output in weak light condition, such as cloudy, morning and sunset

Extended wind and snow load tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal) *

PID Resistance

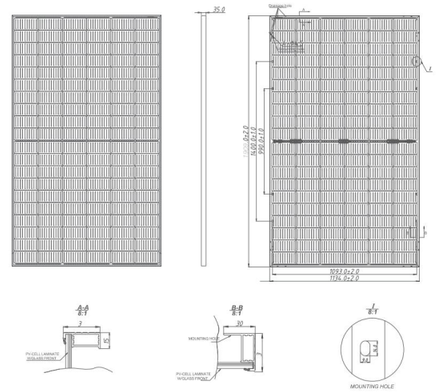
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Lower LCOE

Higher bifaciality, higher power output and lower BOS cost

MECHANICAL SPECIFICATIONS

Cell Type	N type Mono-crystalline
Cell Dimensions	182*182mm
Cell Arrangement	120 (6*20)
Weight	28KG
Module Dimensions	1908*1134*30mm
Cable Length	Portrait 300mm/Landscape 1200mm/Customized
Cable Cross Section Size	TUV: 4mm2 /UL: 12AWG
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	36pcs/pallet, 864pcs/40HQ
Frame	Anodized Aluminium
Junction Box	IP68



ELECTRICAL SPECIFICATIONS

Module Type	NKM465N-120BDM10		NKM470N-120BDM10		NKM475N-120BDM10		NKM480N-120BDM10		NKM485N-120BDM10	
Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Rated output (Pmp/Wp)	465	351	470	355	475	359	480	362	485	366
Maximum Power Voltage(Vmpp/V)	35.2	32.7	353	32.8	35.5	33.0	35.6	33.1	35.8	33.3
Maximum Power Current(Impp/A)	13.22	10.73	13.31	10.82	13.39	10.87	13.48	10.95	13.56	11.01
Open Circuit Voltage(Voc/V)	42.5	40.2	42.6	40.4	42.8	40.5	42.9	40.7	43.1	40.8
Short Circuit Current(Isc/A)	13.98	11.36	14.09	11.44	14.16	11.50	14.26	11.58	14.34	11.65
Module efficiency(%)	21.5%		21.7%		21.9%		22.2%		22.4%	
Power Tolerance (W)	0~+5		0~+5		0~+5		0~+5		0~+5	

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM 1.5 NMOT: Irradiance at 800W/m2, Ambient Temperatue 20°C, Air Mass AM1.5, Wind Speed 1m/s

BIFACIAL OUTPUT-REARSIDE POWER GAIN

5%	Maximum Power(Pmax)	488	494	499	504	509
	Module Efficiency STC (%)	22.5%	22.8%	23.1%	23.3%	23.5%
15%	Maximum Power(Pmax)	535	541	546	552	558
	Module Efficiency STC (%)	24.7%	25.0%	25.2%	25.5%	25.8%
25%	Maximum Power(Pmax)	581	588	594	600	606
	Module Efficiency STC (%)	26.8%	27.2%	27.4%	27.7%	28.0%

MAXIMUM RATINGS

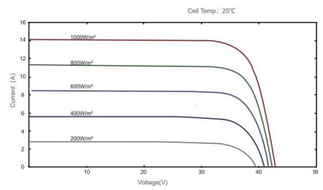
Maximum System Voltage	1500V DC (IEC)
Operating Temperature	-40°C - +85°C
Maximun Series Fuse	25A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1 Ω
Safety Class	II
Resistance	≥100MΩ

TEMPERATURE CHARACTERISTICS

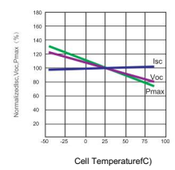
NMOT Temperature	45°C±2°C
Temprature Coefficient (Pmax)	-0.30%/°C
Temprature Coefficient (Voc)	-0.25%/°C
Temprature Coefficient (Isc)	0.046%/°C

CURVE & TEMPERATURE DEPENDENCE

NKM475N-120BDM10



Power voltage current curve at different temperature



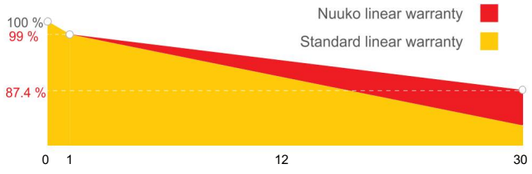
Cell Temperature(℃)

NKM-144 N-type (182mm Cell)

565-585 Watt

MONOFACIAL MODULE

Industry-leading Warranty based on nominal power



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Features

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The N-type module with Hot 2.0 technology has betterreliability and lower LID/LETID.

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Extended wind and snow load tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal) *

PID Resistance

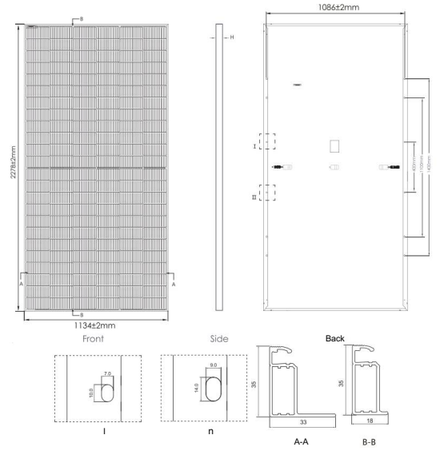
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Lower LCOE

Higher bifaciality, higher power output and lower BOS cost

MECHANICAL SPECIFICATIONS

Cell Type	N type Mono-crystalline
Cell Dimensions	182*182mm
Cell Arrangement	144 (6*24)
Weight	28kg
Module Dimensions	2278*1134*35mm
Cable Length	Portrait 300mm/Landscape 1200mm/Customized
Cable Cross Section Size	TUV: 4mm² /UL: 12AWG
Front Glass	3.2mm AR Coating Tempered Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	31pcs/carton, 620pcs/40hq
Frame	Anodized Aluminium Alloy
Junction Box	IP68



ELECTRICAL SPECIFICATIONS

Module type	NKM565N-144M10		NKM570N-144M10		NKM575N-144M10		NKM580N-144M10		NKM585N-144M10	
Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Rated output (Pmp/Wp)	565	425	570	429	575	432	580	436	585	440
Maximum Power Voltage(VmppAZ)	42.1	39.5	42.3	39.7	42.4	39.8	42.6	39.9	42.8	40.0
Maximum Power Current(Impp/A)	13.42	10.76	13.48	10.81	13.56	10.86	13.62	10.93	13.67	10.98
Open Circuit Voltage(Voc/V)	50.9	48.3	51.1	48.5	51.3	48.7	51.5	48.9	51.7	49.1
Short Circuit Current(Isc/A)	14.19	11.46	14.25	11.50	14.31	11.55	14.37	11.60	14.43	11.65
Module efficiency(%)	21.9%		22.1%		22.3%		22.5%		22.7%	
Power Tolerance (W)	0~+5		0~+5		0~+5		0~+5		0~+5	

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM 1.5 NMOT: Irradiance at 800W/m2, Ambient Temperatue 20°C, Air Mass AM1.5, Wind Speed 1m/s

MAXIMUM RATINGS

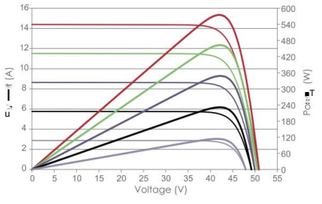
Maximum System Voltage	1000V/1500V DC (IEC)
Operating Temperature	-40°C ~+85°C
Maximun Series Fuse	25A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1 Q
Safety Class	II
Resistance	≥100MQ

TEMPERATURE CHARACTERISTICS

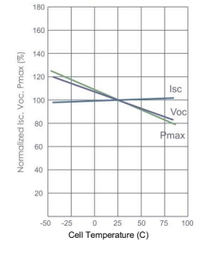
NMOT Temperature	45°C±2°C
Temprature Coefficient (Pmax)	-0.30%/°C
Temprature Coefficient (Voc)	-0.25%/°C
Temprature Coefficient (Isc)	0.046%/°C

CURVE & TEMPERATURE DEPENDENCE

NKM575N-144M10



Temperature Dependence of Isc,Voc,Pmax

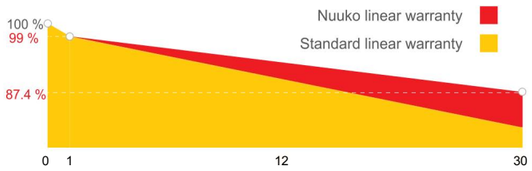


NKM-144 N-type (182mm Cell)

565-585 Watt

BIFACIAL MODULE

Industry-leading Warranty based on nominal power



* 0.4% Annual Degradation over 30 Years
* 12 Years Product Warranty
* 30 Years Linear Power Warranty

Features

SMBB Technology

Better light trapping and current collection to improvemodule power output and reliability.

Hot 2.0 Technology

The N-type module with Hot 2.0 technology has betterreliability and lower LID/LETID.

Excellent weak light performance

More power output in weak light condition, such as cloudy, morning and sunset

Extended wind and snow load tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal) *

PID Resistance

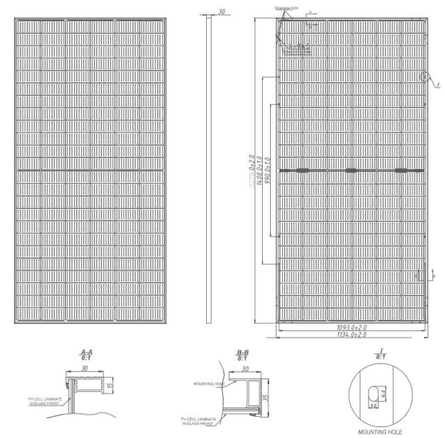
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Lower LCOE

Higher bifaciality, higher power output and lower BOS cost

MECHANICAL SPECIFICATIONS

Cell Type	N type Mono-crystalline
Cell Dimensions	182*182mm
Cell Arrangement	144 (6*24)
Weight	32kg
Module Dimensions	2278*1134*30mm
Cable Length	Portrait 300mm/Landscape 1200mm/Customized
Cable Cross Section Size	TUV: 4mm² /UL: 12AWG
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	36pcs/pallet, 720pcs/40hq
Frame	Anodized Aluminium Alloy
J unction Box	IP68



ELECTRICAL SPECIFICATIONS

Module Type	NKM565N-144BDM10		NKM570N-144BDM10		NKM575N-144BDM10		NKM580N-144BDM10		NKM585N-144BDM10	
Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Rated output (Pmp/Wp)	565	425	570	429	575	432	580	436	585	439
Maximum Power Voltage(Vmpp/V)	42.1	39.5	42.3	39.7	42.4	39.8	42.6	39.9	42.8	40.0
Maximum Power Current(Impp/A)	13.42	10.76	13.48	10.81	13.56	10.86	13.62	10.93	13.67	10.98
Open Circuit Voltage(Voc/V)	50.9	48.3	51.1	48.5	513	48.7	51.5	48.9	51.7	49.1
Short Circuit Current(Isc/A)	14.19	11.46	14.25	11.50	14.31	11.55	14.37	11.60	14.43	11.65
Module efficiency(%)	21.9%		22.1%		22.3%		22.5%		22.6%	
Power Tolerance (W)	0~+5		0~+5		0~+5		0~+5		0~+5	

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5 NMOT: Irradiance at 800W/m2, Ambient Temperatue 20°C, Air Mass AM1.5, Wind Speed 1m/s

BIFACIAL OUTPUT-REARSIDE POWER GAIN

5%	Maximum Power(Pmax)	593	599	604	609	614
	Module Efficiency STC (%)	23.0%	23.2%	23.4%	23.6%	23.8%
15%	Maximum Power(Pmax)	650	656	661	667	673
	Module Efficiency STC (%)	25.2%	25.4%	25.6%	25.8%	26.1%
25%	Maximum Power(Pmax)	706	713	719	725	731
	Module Efficiency STC (%)	27.3%	27.6%	27.8%	28.1%	28.3%

MAXIMUM RATINGS

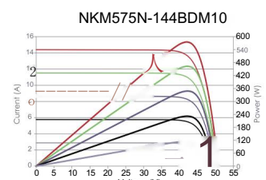
Maximum System Voltage	1000V/1500V DC (IEC)
Operating Temperature	-40°C - +85°C
Maximun Series Fuse	30A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.10
Safety Class	II
Resistance	≥100MQ

TEMPERATURE CHARACTERISTICS

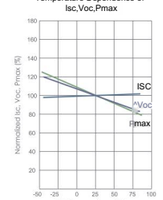
NMOT Temperature	45°C±2°C
Temprature Coefficient (Pmax)	-0.30%/°C
Temprature Coefficient (Voc)	-0.25%/°C
Temprature Coefficient (Isc)	0.046%/°C

CURVE & TEMPERATURE DEPENDENCE

NKM575N-144BDM10



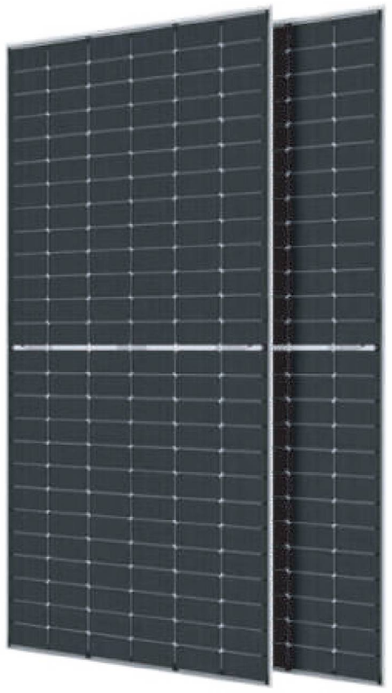
Temperature Dependence of Isc,Voc,Pmax



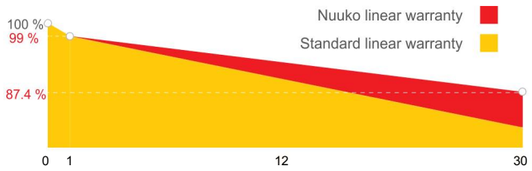
NKM-156 N-type (182mm Cell)

610-635 Watt

BIFACIAL MODULE



Industry-leading Warranty based on nominal power



* 0.4% Annual Degradation over 30 Years
* 12 Years Product Warranty
* 30 Years Linear Power Warranty

Features

SMBB Technology

Better light trapping and current collection to improvemodule power output and reliability.

Hot 2.0 Technology

The N-type module with Hot 2.0 technology has betterreliability and lower LID/LETID.

Excellent weak light performance

More power output in weak light condition, such as cloudy, morning and sunset

Extended wind and snow load tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal) *

PID Resistance

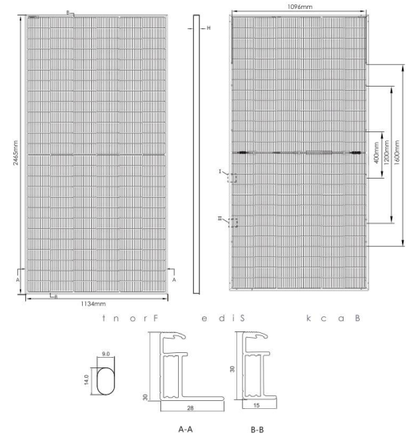
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Lower LCOE

Higher bifaciality, higher power output and lower BOS cost

MECHANICAL SPECIFICATIONS

Cell Type	N type Mono-crystalline
Cell Dimensions	182*182mm
Cell Arrangement	156 (6*26)
Weight	34.5kg
Module Dimensions	2465*1134*30mm
Cables	4.0mm²(+): 300mm. (-): 300mm or Customized Length
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
No. of Bypass Diodes	3/6
Packing Configuration	36pcs/pallet, 576pcs/40HQ
Frame	Anodized Aluminium Alloy
Junction Box	IP68



ELECTRICAL SPECIFICATIONS

Module Type	NKM610N-156BDM10		NKM615N-156BDM10		NKM620N-156BDM10		NKM625N-156BDM10		NKM630N-156BDM10		NKM635N-156BDM10	
Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Rated output (Pmp/Wp)	610	459	615	462	620	466	625	470	630	474	635	477
Maximum Power Voltage(Vmpp/V)	45.60	42.35	45.75	42.46	45.90	42.57	46.05	42.68	46.20	42.79	46.35	42.90
Maximum Power Current(Impp/A)	13.38	10.83	13.45	10.89	13.51	10.95	13.58	11.01	13.64	11.07	13.70	11.13
Open Circuit Voltage(Voc/V)	55.30	52.53	55.45	52.67	55.56	52.80	55.75	52.93	55.90	53.06	56.05	53.19
Short Circuit Current(Isc/A)	14.03	11.33	14.11	11.39	14.19	11.45	14.27	11.51	14.35	11.57	14.43	11.63
Module efficiency(%)	21.8%		22.0%		22.2%		22.4%		22.5%		22.7%	
Power Tolerance (W)	0~+5		0~+5		0~+5		0~+5		0~+5		0~+5	

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5 NMOT: Irradiance at 800W/m2, Ambient Temperatue 20°C, Air Mass AM1.5, Wind Speed 1m/s

Electrical Characteristics with Different Rearside Power Gain (Reference to 620 W Front)

Pmax/W	651	682	713	744	775
Vmpp/V	45.9	45.9	45.9	45.9	45.9
Impp/A	14.19	14.86	15.54	16.21	16.89
Isc/A	55.56	55.56	55.56	55.56	55.56
Voc/V	14.90	15.61	16.32	17.0	17.74
Pmax gain	5%	10%	15%	20%	25%

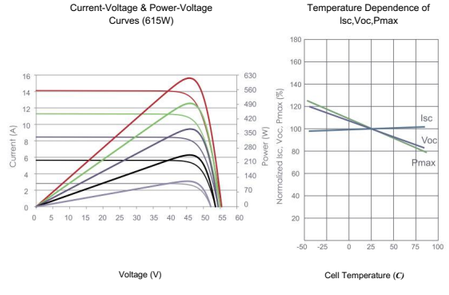
MAXIMUM RATINGS

Maximum System Voltage	1500V DC (IEC)
Operating Temperature	-40°C ~+85°C
Maximun Series Fuse	30A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	<0.1 Ω
Safety Class	II
Resistance	≥100MΩ
Refer. Bifacial Factor	80% ± 5%

TEMPERATURE CHARACTERISTICS

NMOT Temperature	45°C±2°C
Temprature Coefficient (Pmax)	-0.30%/°C
Temprature Coefficient (Voc)	-0.25%/°C
Temprature Coefficient (Isc)	0.046%/°C

CURVE & TEMPERATURE DEPENDENCE

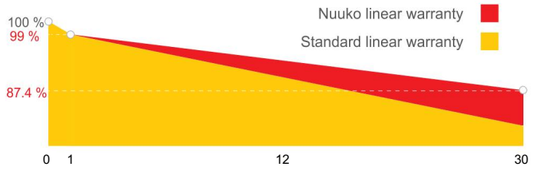


NKM-132NType (210mm Cell)

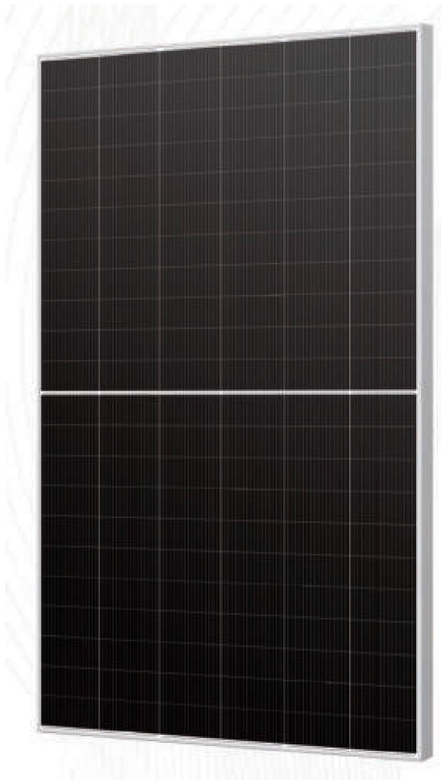
680-700 Watt

BIFACIAL MODULE

Industry-leading Warranty based on nominal power



* 0.4% Annual Degradation over 30 Years
* 12 Years Product Warranty
* 30 Years Linear Power Warranty



Features

SMBB Technology

Better light trapping and current collection to improvemodule power output and reliability.

Hot 2.0 Technology

The N-type module with Hot 2.0 technology has betterreliability and lower LID/LETID.

Excellent weak light performance

More power output in weak light condition, such as cloudy, morning and sunset

Extended wind and snow load tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal) *

PID Resistance

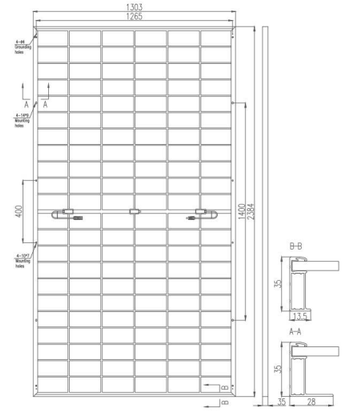
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Lower LCOE

Higher bifaciality, higher power output and lower BOS cost

MECHANICAL SPECIFICATIONS

Cell Type	TOPCon Monocrystalline
Cell Dimensions	210*210mm
Cell Arrangement	132 (6*22)
Weight	38kg
Module Dimensions	2384*1303*35mm
Cable Length	TUV 4.0mm^2, (+):300mm/(-):200mm or Customized length
Cable Cross Section Size	TUV: 4mm^2 /UL: 12AWG
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	31pcs/carton, 558pcs/40hq
Frame	Anodized Aluminium Alloy
Junction Box	IP68



ELECTRICAL SPECIFICATIONS

Module Type	NKM680N-132BDG12		NKM685-132BDG12		NKM690-132BDG12		NKM695-132BDG12		NKM700-132BDG12	
Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Rated output (Pmp/Wp)	680	513	685	517	690	521	695	525	700	529
Maximum Power Voltage(Vmpp/V)	38.6	36.2	38.7	36.4	38.9	36.6	39.1	36.7	39.3	36.9
Maximum Power Current(Impp/A)	17.62	14.17	17.70	14.20	17.74	14.24	17.78	14.31	17.81	14.34
Open Circuit Voltage(Voc/V)	46.5	44.4	46.7	44.6	46.9	44.8	47.1	45.0	47.3	45.2
Short Circuit Current(Isc/A)	18.69	15.04	18.74	15.08	18.78	15.11	18.83	15.15	18.87	15.19
Module efficiency(%)	21.9%		22.1%		22.2%		22.4%		22.5%	
Power Tolerance (W)	0~+5		0~+5		0~+5		0~+5		0~+5	

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5 NMOT: Irradiance at 800W/m2, Ambient Temperatue 20°C, Air Mass AM1.5, Wind Speed 1m/s

Electrical characteristics with different rear side power gain (refer to 690W front)

Pmax/W	725	759	794	828	863
Vmpp/V	38.9	38.9	38.9	38.9	38.9
Impp/A	18.63	19.51	20.40	21.29	22.18
Voc/V	46.9	46.9	46.9	46.9	46.9
Isc/A	19.72	20.66	21.60	22.54	23.48
Pmax gain	5%	10%	15%	20%	25%

MAXIMUM RATINGS

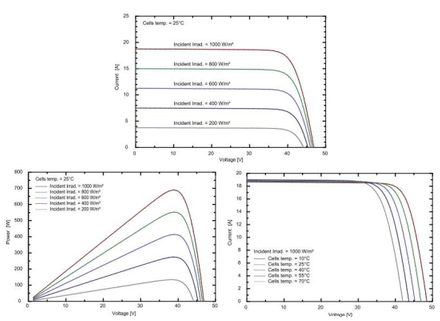
Maximum System Voltage	1500V DC (IEC)
Operating Temperature	-40°C - +85°C
Maximun Series Fuse	30A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1Ω
Safety Class	II
Resistance	≥100MΩ

TEMPERATURE CHARACTERISTICS

NMOT Temperature	42°C±2°C
Temprature Coefficient (Pmax)	-0.31 %/°C
Temprature Coefficient (Voc)	-0.26%/°C
Temprature Coefficient (Isc)	0.046%/°C

CURVE & TEMPERATURE DEPENDENCE

NKM690-132BDG12

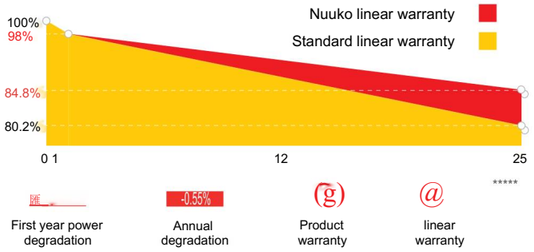


NKM-144 (182mm Cell)

540-560 Watt

MONOFACIAL MODULE

Industry-leading Warranty based on nominal power



Features

High module conversion efficiency

Module efficiency up to 21.7% achieved through advanced cell technology and manufacturing process

Extended wind and snow load tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal) *

Excellent weak light performance

More power output in weak light condition, such as cloudy, morning and sunset

Lower operating temperature

Lower operating temperature and temperature coefficient increases the power output

Nuuko current sorting process

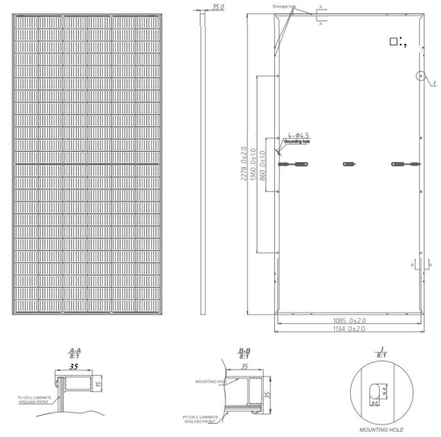
Up to 2 % power loss caused by current mismatch could be diminished by current sorting technique to maximize system power output

Withstanding harsh environment

Reliable quality leads to a better sustainability even in harsh environment like desert, farm and coastline

MECHANICAL SPECIFICATIONS

Cell Type	Monocrystalline
Cell Dimensions	182*182mm
Cell Arrangement	144 (6*24)
Weight	28kg
Module Dimensions	2278*1134*35mm
Cable Length	Portrait 300mm/Landscape 1200mm/Customized
Cable Cross Section Size	TUV: 4mm²/UL: 12AWG
Front Glass	3.2mm AR Coating Tempered Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	31pcs/Pallet, 620pcs/40HQ
Frame	Anodized Aluminium Alloy
Junction Box	IP68



ELECTRICAL SPECIFICATIONS

Module Type	NKM540-144M10		NKM545-144M10		NKM550-144M10		NKM555-144M10		NKM560-144M10	
Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Rated output (Pmp/Wp)	540	402	545	405	550	409	555	413	560	417
Maximum Power Voltage(Vmpp/V)	41.9	39.0	42.0	39.1	42.1	39.2	42.2	39.3	42.3	39.4
Maximum Power Current(Impp/A)	12.89	10.30	12.98	10.37	13.07	10.44	13.16	10.51	13.25	10.58
Open Circuit Voltage(Voc/V)	49.7	46.5	49.8	46.6	49.9	46.7	50.0	46.8	50.1	46.9
Short Circuit Current(Isc/A)	13.62	10.98	13.71	11.05	13.80	11.12	13.89	11.19	13.98	11.26
Module efficiency(%)	20.9%		21.1%		21.3%		21.5%		21.7%	
Power Tolerance (W)	0~+5		0~+5		0~+5		0~+5		0~+5	

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM 1.5 NMOT: Irradiance at 800W/m2, Ambient Temperatue 20°C, Air Mass AM1.5, Wind Speed 1m/s

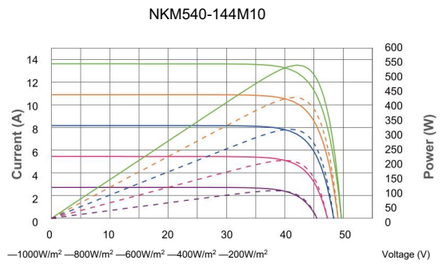
MAXIMUM RATINGS

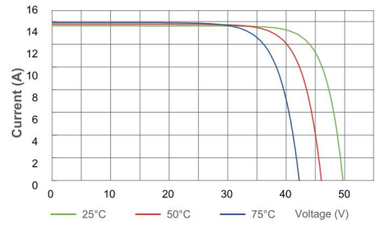
Maximum System Voltage	1000V/1500V DC (IEC)
Operating Temperature	-40°C ~ +85°C
Maximun Series Fuse	25A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1 Q
Safety Class	II
Resistance	≥100MQ

TEMPERATURE CHARACTERISTICS

NMOT Temperature	43°C±2°C
Temprature Coefficient (Pmax)	-0.36%/°C
Temprature Coefficient (Voc)	-0.26%/°C
Temprature Coefficient (Isc)	0.043%/°C

CURVE & TEMPERATURE DEPENDENCE



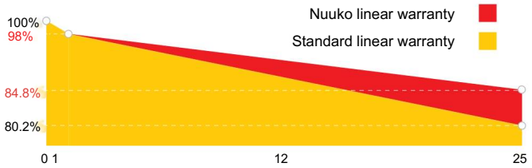


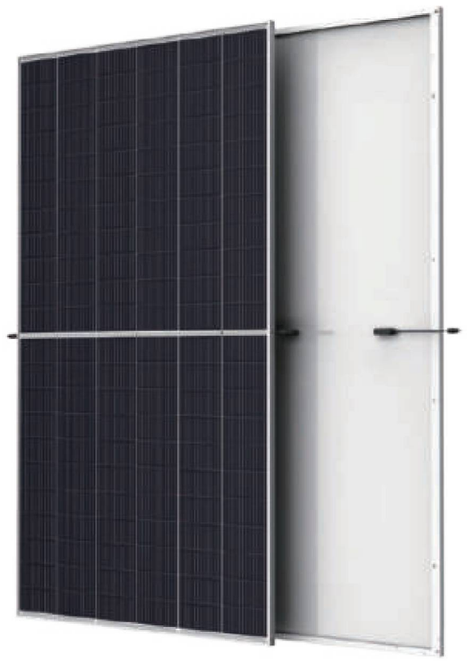
NKM-132 (210mm Cell)

645-670 Watt

MONOFACIAL MODULE

Industry-leading Warranty based on nominal power





Features

High module conversion efficiency

Module efficiency up to 21.6% achieved through advanced cell technology and manufacturing process

Extended wind and snow load tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal) *

Excellent weak light performance

More power output in weak light condition, such as cloudy, morning and sunset

Lower operating temperature

Lower operating temperature and temperature coefficient increases the power output

Nuuko current sorting process

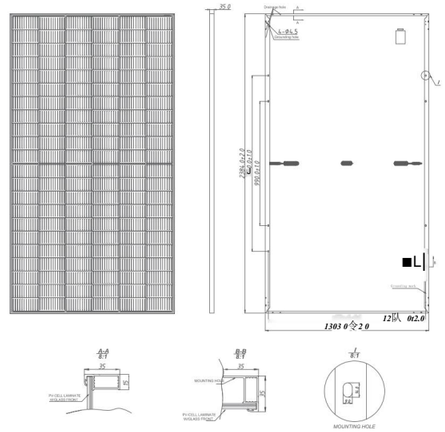
Up to 2 % power loss caused by current mismatch could be diminished by current sorting technique to maximize system power output

Withstanding harsh environment

Reliable quality leads to a better sustainability even in harsh environment like desert, farm and coastline

MECHANICAL SPECIFICATIONS

Cell Type	Monocrystalline
Cell Dimensions	210*210mm
Cell Arrangement	132 (6*22)
Weight	34.5kg
Module Dimensions	2384*1303*35mm
Cable Length	Portrait 300mm/Landscape 1200mm/Customized
Cable Cross Section Size	TUV: 4mm²/UL: 12AWG
Front Glass	3.2mm AR Coating Tempered Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	31pcs/Pallet, 558pcs/40HQ
Frame	Anodized Aluminium Alloy
Junction Box	IP68



ELECTRICAL SPECIFICATIONS

Module Type	NKM645-132G12		NKM650-132G12		NKM655-132G12		NKM660-132G12		NKM665-132G12		NKM670-132G12	
Testing Condition	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Rated output (Pmp/Wp)	645	479	650	483	655	486	660	490	665	494	670	498
Maximum Power Voltage(VmppAZ)	37.6	35.1	37.8	35.3	38.0	35.5	38.2	35.7	38.4	35.9	38.6	36.1
Maximum Power Current(Impp/A)	17.16	13.63	17.20	13.67	17.24	13.70	17.28	13.74	17.32	13.77	17.36	13.80
Open Circuit Voltage(Voc/V)	45.0	42.4	45.2	42.6	45.4	42.8	45.6	43.0	45.8	43.2	46.0	43.4
Short Circuit Current(Isc/A)	18.22	14.65	18.26	14.68	18.30	14.71	18.34	14.74	18.38	14.78	18.42	14.81
Module efficiency(%)	20.8%		20.9%		21.1%		21.3%		21.4%		21.6%	
Power Tolerance (W)	0~+5		0~+5		0-+5		0~+5		0~+5		0~+5	

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5 NMOT: Irradiance at 800W/m2, Ambient Temperatue 20°C, Air Mass AM1.5, Wind Speed 1m/s

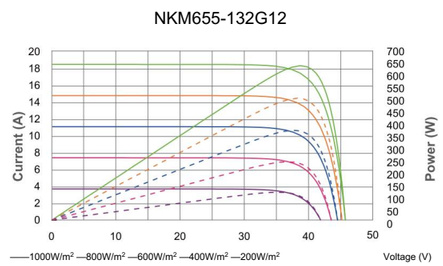
MAXIMUM RATINGS

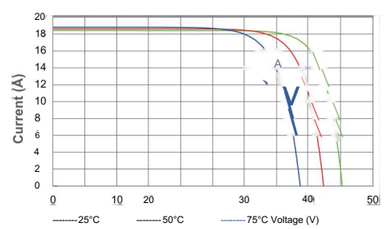
Maximum System Voltage	1000V/1500V DC (IEC)
Operating Temperature	-40°C - +85°C
Maximun Series Fuse	30A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1 Q
Safety Class	II
Resistance	≥100MQ

TEMPERATURE CHARACTERISTICS

NMOT Temperature	43°C±2°C
Temprature Coefficient (Pmax)	-0.36%/°C
Temprature Coefficient (Voc)	-0.26%/°C
Temprature Coefficient (Isc)	0.043%/°C

CURVE & TEMPERATURE DEPENDENCE





PROJECT CASE
项目案例

RESIDENTIAL PHOTOVOLTAIC PROJECT
户用光伏项目

INDUSTRIAL/COMMERCIAL PHOTOVOLTAIC PROJECT
工商业光伏项目

GROUND POWER STATION PHOTOVOLTAIC PROJECT
地面电站光伏项目

户用光伏项目

RESIDENTIAL

PHO TOVOLTAInP 刀O JEOT

[1 **Edinburgh,England** 英国爱丁堡 | 10KW

Q **Goteborg,Swden** 瑞典哥德堡 | 5KW

£] **Eindhoven, Netherlands** 荷兰埃因霍温 | 5.7KW

Q **Romania** 罗马尼亚 | 26KW

B **Jamaica** 牙买加 | 15KW

0 **Henan ,China** 中国河南 | 50KW

Q **hanover,Germany** 德国汉诺威 | 6KW

EI **Manila,Philippines** 菲律宾马尼拉 I 4.5KW

EI **Denmark** 丹麦 | 50KW

E **Philippines** 菲律宾 | 20KW

U **Warsaw,Poland** 波兰华沙 | 9.5KW

iE **Adelaide, Australia**澳大利亚阿德莱德I 3KW

[E **Quito,Ecuador** 厄瓜多尔基多 | 8KW

JE **Oslo,Norway** 挪威奥斯陆 I 50KW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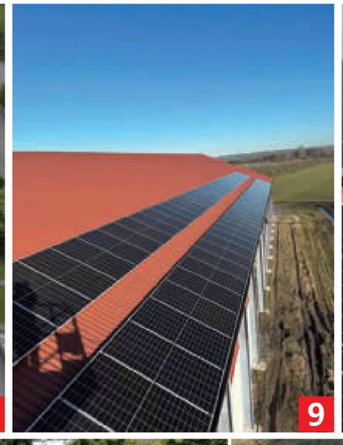
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INDUSTRIAL/COMMERCIAL PHOTOVOLTAIC PROJECT

工商业光伏项目


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Q Romania 罗马尼亚 | 100KW

Q Laem Chabang,Thailand 泰国林查班 | 250KW

El Thailand 泰国 | 545KW

H Shenzhen,China 中国深圳 | 120KW

S Romania 罗马尼亚 | 100KW

Q Italy 意大利 I 375KW

Q Romania 罗马尼亚 | 150KW

0 Phnom Penh, Cambodia 柬埔寨金边 | 200KW

EJ Hanoi,Vietnam 越南河内 | 500KW

地面电站光伏项目

GROUND POWER PHOTOVOLTAIC PS STATION JECT

®

El **Manzanillo, Mexico** 墨西哥曼萨尼约 | 10MW

Q **Uruguay** 乌拉圭 | 1MW

El **Peru** 秘鲁 I 30KW

Q **Morocco** 摩洛哥 I 21KW

Q **Taiz, Yemen** 也门塔伊兹 | 250KW

Q **Manukau,New Zealand** 新西兰曼努考 I 90KW

El **Palermo,Italy** 意大利巴勒莫 | 150KW


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