

LESSO

SOLAR PV MODULES

SIMPLIFIED VERSION

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LESSO Group (2128) is listed in the Stock Exchange of Hong Kong.

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**SOLAR SOLUTIONS
MANUFACTURER**



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A Bright and Exciting Journey

LESSO Group is a Hong Kong-listed (2128.HK) manufacturer of building materials with an annual revenue of over USD4.38 billion from its global operations.

LESSO Solar, a flagship division of LESSO Group, specialises in manufacturing solar panels, inverters, and energy storage systems, and providing solar-energy solutions.

Founded in 2022, LESSO Solar has been growing with spectacular pace, with global production capacity of over 15.3GW for solar panels and 6GW for solar cells.

- 
USD4.38 bil
 Annual Sales Revenue
- 
5 major
 Production Bases
- 
38 years
 Production Experience
- 
15.3 GW
 Solar Modules Manufacturing Capacity



Leading the Future with Intelligent Manufacturing

Our 5 production bases aim to grow into a large-scale global manufacturer of solar solutions, introduce advanced equipment, and create intelligent and automated production lines for intelligent building photovoltaic integrated BIPV, solar PV modules, and solar cells.

Our Production Bases



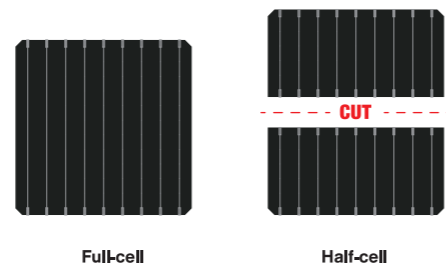
Our Certificates

- IEC61215, IEC61730
- ISO 9001:2015 Quality Management System
- ISO 14001:2015 Environment Management System
- ISO 45001:2018 Occupational Health and Safety Management System



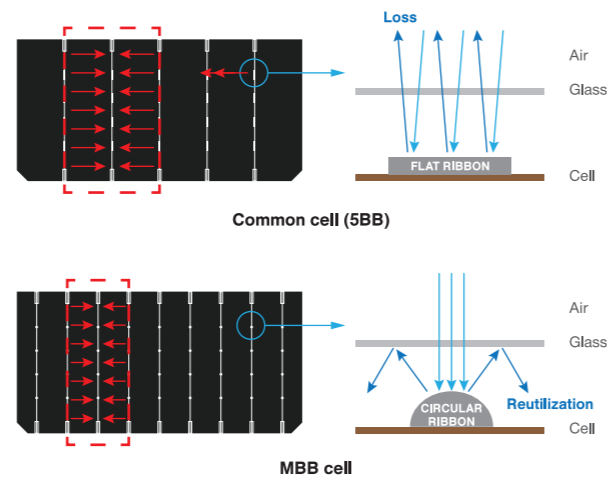
HALF-CELL TECHNOLOGY

Using half-cells technology, the electrical current density is reduced by 50%. Therefore, the amount of internal power loss in a half-cut module reduced by 25%, and rated output power is increased.



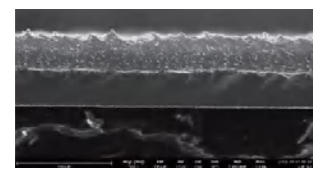
MBB TECHNOLOGY

MBB technology can shorten the battery current collection path by more than 50%, reduce the loss of lateral resistance, and effectively improve the power output of components. LESSO modules use circular ribbon reduces the shading area and repeatedly reflects the incident light to enhance the power generation.



NON-DESTRUCTIVE CUTTING TECHNOLOGY

Non-destructive cutting technology, smooth cross-section, lower micro-cracks risk, achieving better cell strength, and ensures the best mechanical performance of solar cells.



Cross-section from conventional cutting



Cross-section from non-destructive cutting

HIGH-DENSITY PACKAGING TECHNOLOGY

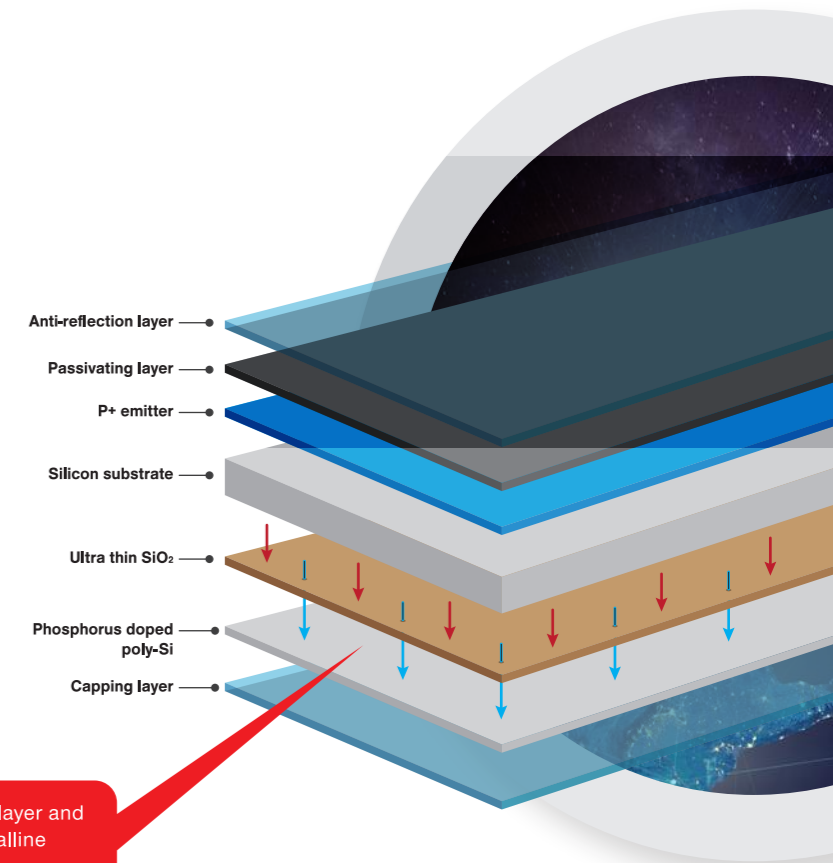
Under the same component area, High-density packaging technology can increase the effective power generation area of modules, improve efficiency, and ensure product reliability.



TOPCON TECHNOLOGY

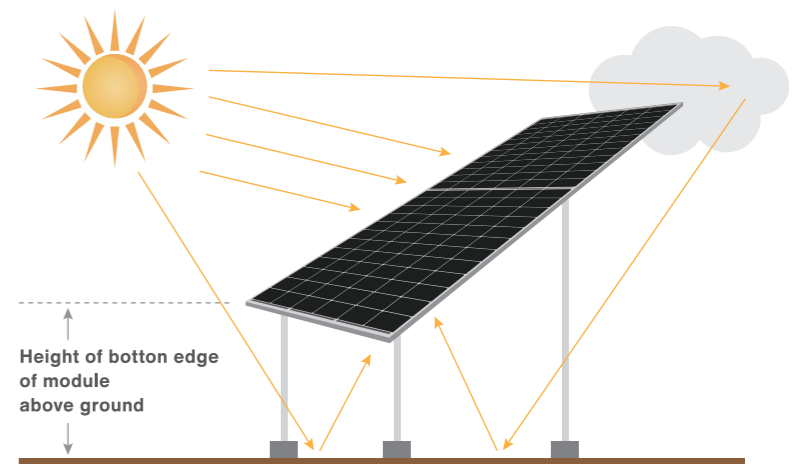
TOPCon cell adopts a new surface passivation technology, which effectively reduces surface compound and metal contact compound.

Compared with conventional modules, N-type modules have only 1% first-year attenuation and 0.4% lower annual attenuation than the conventional modules, resulting in higher power generation and higher revenue for customers.



BIFACIAL TECHNOLOGY

The bifacial module fully utilizes the reflection and scattering of light and is suitable for various high reflection scenarios, demonstrating excellent long-term reliability and higher quality.

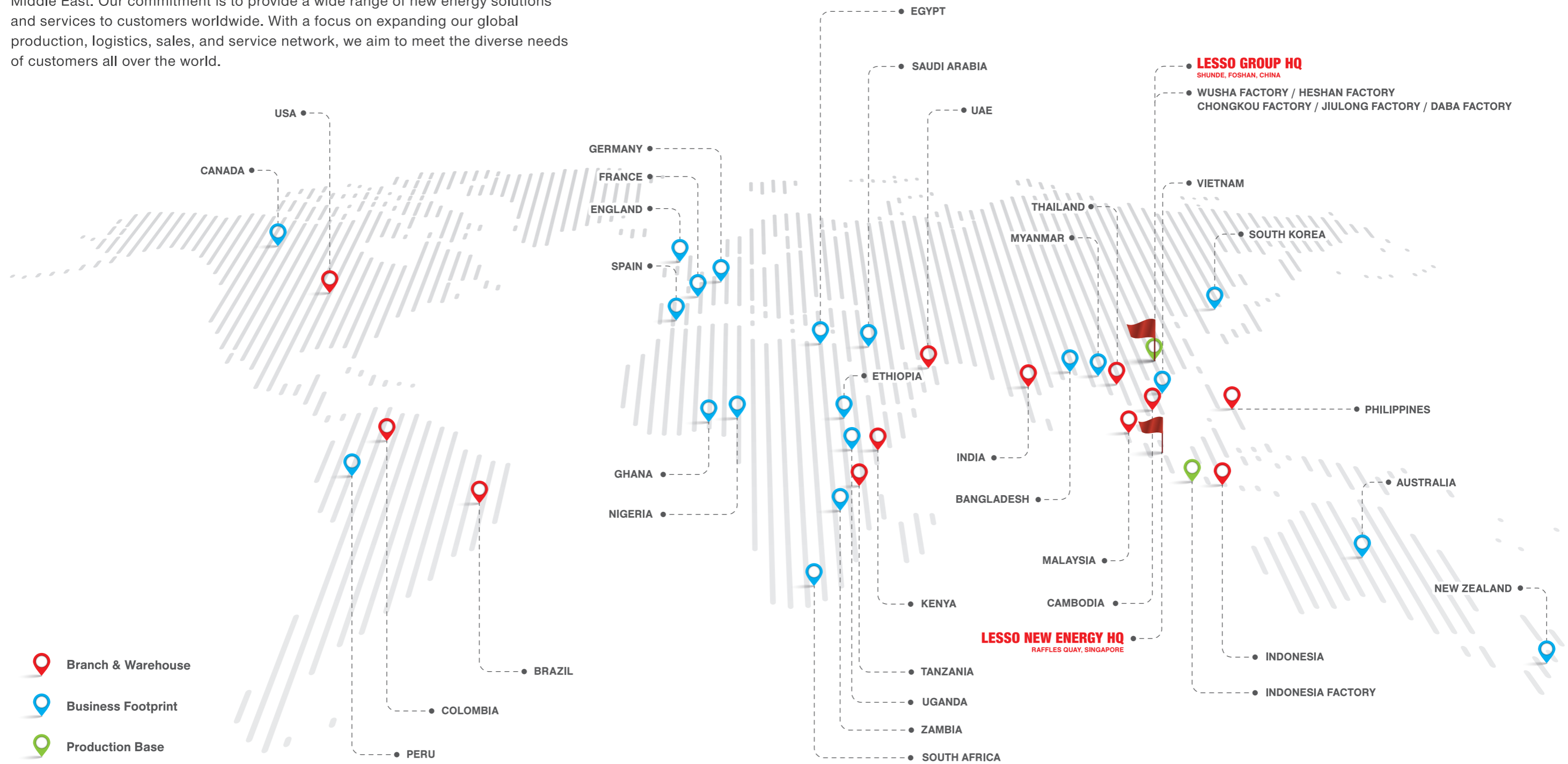


Power generation gain in different scenarios (%)

Water 3~5%	Grass 5~10%	Cement 5~10%	Sand 5~10%	White paint 15~25%

LESSO Solar Global Footprint

Drawing upon the extensive resources of LESSO, the global footprint of LESSO solar has covered Asia, North America, South America, Europe, South Africa, and the Middle East. Our commitment is to provide a wide range of new energy solutions and services to customers worldwide. With a focus on expanding our global production, logistics, sales, and service network, we aim to meet the diverse needs of customers all over the world.

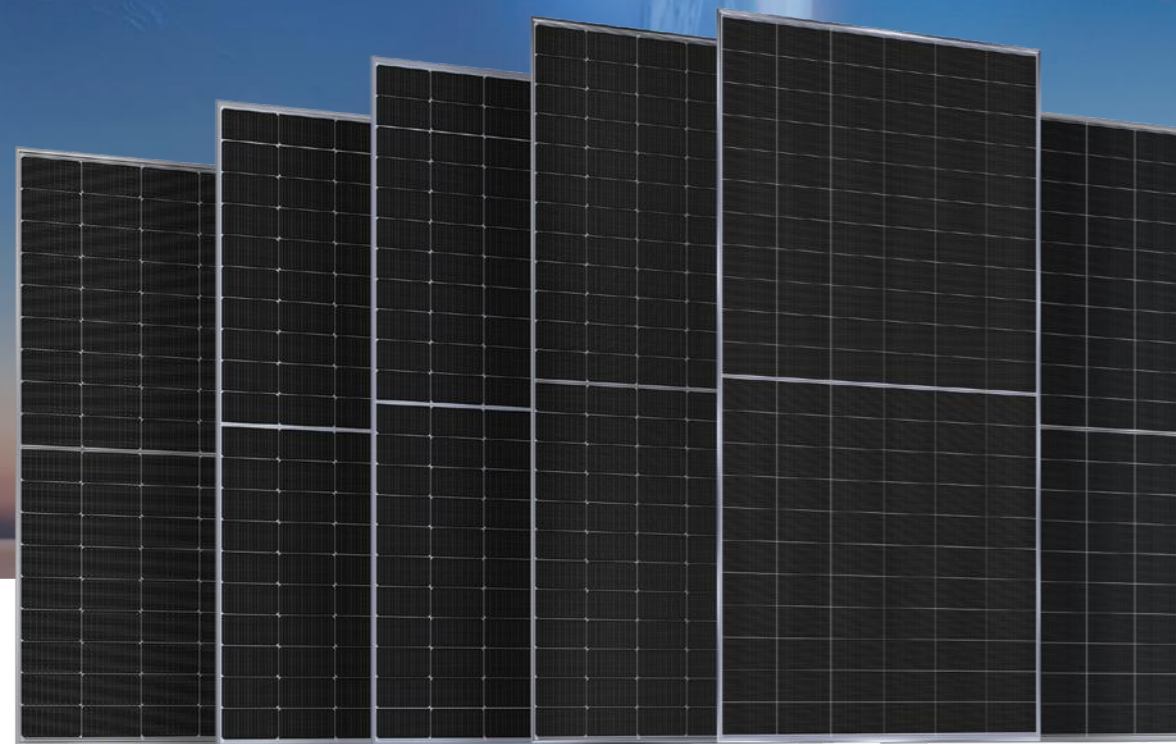


N series

Release Unlimited Power, Leading Innovation

The LESSO Solar N Series relies on TOPCon technology, maximum efficiency reaches 23.25%.

N-type cell is zero LID can increase power generation. The degradation is only 1% in the first year and 0.4% each subsequent year. Excellent power generation performance creates higher revenue for customers.



TOPCon Technology
Higher Power Generation



MBB Technology
Reducing String & Busbar Loss



High Density Packaging
Improving Energy Density



Even Cloudy or Foggy Days
Better Weak Illumination Response



Zero LID
Increase Power Generation



Better Temperature Coefficient
More Power Generation



Higher Power Output
Lower BOS Cost



Multiple Weather Resistance Tests
Wider Applicability



Double-sided Generation
Powerfully Energy Boost

Power Range
425W ~ 720W

Maximum Efficiency
23.25%

12 years product workmanship warranty

30 years linear power output warranty

1% 1st-year degradation 0.40% annual degradation

N Series Mainstream Products

Product	Power (W)	Maximum Efficiency	Size (mm)
182 N-type (54) single glass	425 - 445	22.79%	1722x1134x35/30
182 N-type (54) double glass			
182 N-type (60) single glass	475 - 495	22.87%	1909x1134x35/30
182 N-type (60) double glass			
182 N-type (66) single glass	525 - 545	22.95%	2094x1134x35/30
182 N-type (66) double glass			
182 N-type (72) single glass	575 - 595	23.03%	2278x1134x35/30
182 N-type (72) double glass			
182 N-type (78) single glass	630 - 650	23.25%	2465x1134x35
182 N-type (78) double glass			
210 N-type (54) single glass	570 - 590	23.10%	1960x1303x35/30
210 N-type (54) double glass			
210 N-type (60) single glass	630 - 650	22.97%	2172x1303x35/30
210 N-type (60) double glass			
210 N-type (66) single glass	700 - 720	23.18%	2384x1303x35/33
210 N-type (66) double glass			
210R N-type (54) single glass	490 - 510	22.95%	1960x1134x35
210R N-type (54) double glass			
210R N-type (60) single glass	545 - 565	22.94%	2172x1134x35
210R N-type (60) double glass			
210R N-type (66) single glass	595 - 615	22.77%	2382x1134x35
210R N-type (66) double glass			

Note: see datasheet for details

182 N-type Bifacial Module (72)

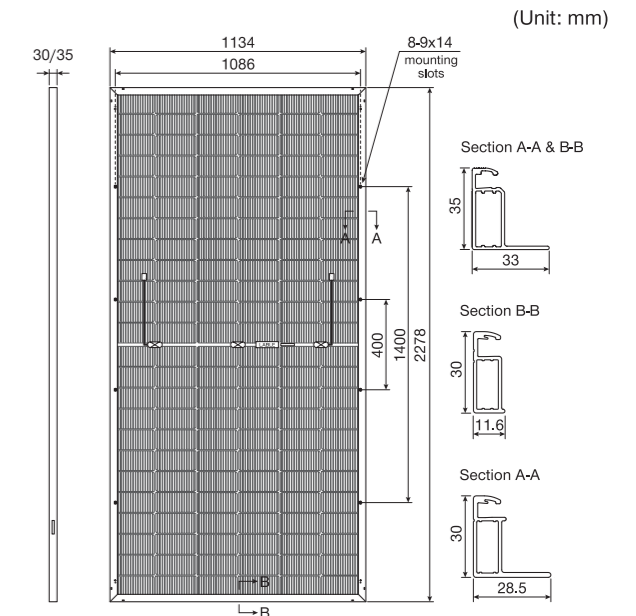
Power Range
575W ~ 595W

Power Output Tolerance
0W ~ +5W

Maximum Efficiency
23.03%

Structure Performance

Solar Cell Type	182mm N-TOpCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm/30mm
Weight	32.3kg(35mm) / 31.2kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy / Polyurethane Composite Frame
Junction Box	IP68 rated
Cable	4mm ² , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm) / 36pcs(30mm)
Per Container(40'HQ)	620pcs(35mm) / 720pcs(30mm)

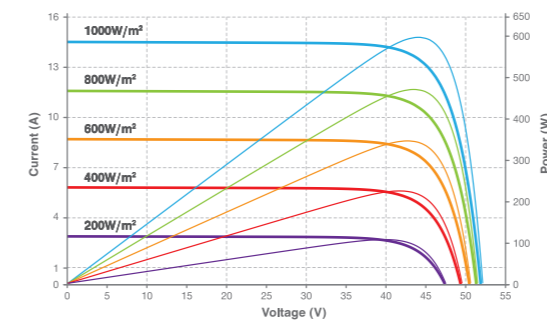


Electrical Performance Parameters

Model Type	575C(HBD)72(182)		580C(HBD)72(182)		585C(HBD)72(182)		590C(HBD)72(182)		595C(HBD)72(182)		
	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	
Nominal Max. Power	P_{max} (W)	575	433	580	437	585	441	590	445	595	449
Max. Power Voltage	V_{mp} (V)	42.60	40.02	42.75	40.17	42.89	40.32	43.04	40.47	43.19	40.62
Max. Power Current	I_{mp} (A)	13.50	10.82	13.57	10.88	13.64	10.94	13.71	11.00	13.78	11.06
Open Circuit Voltage	V_{oc} (V)	51.23	48.66	51.43	48.85	51.63	49.04	51.83	49.23	52.03	49.42
Short Circuit Current	I_{sc} (A)	14.27	11.51	14.33	11.56	14.39	11.61	14.45	11.66	14.51	11.70
Module Efficiency	(%)	22.26		22.45		22.65		22.84		23.03	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (595C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{max} (W)	604	609	614	620	625
	Module Efficiency	(%)	23.37%	23.57%	23.78%	23.98%	24.18%
10%	Maximum Power	P_{max} (W)	633	638	644	649	655
	Module Efficiency	(%)	24.48%	24.70%	24.91%	25.12%	25.34%
25%	Maximum Power	P_{max} (W)	719	725	731	738	744
	Module Efficiency	(%)	27.82%	28.07%	28.31%	28.55%	28.79%

Temperature Characteristics

Nominal Module Operating Temperature	44±2°C	Temperature Coefficient (V_{oc})	-0.25%
Temperature Coefficient (I_{sc})	+0.043%	Temperature Coefficient (P_{max})	-0.30%

Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

210 N-type Bifacial Module (66)

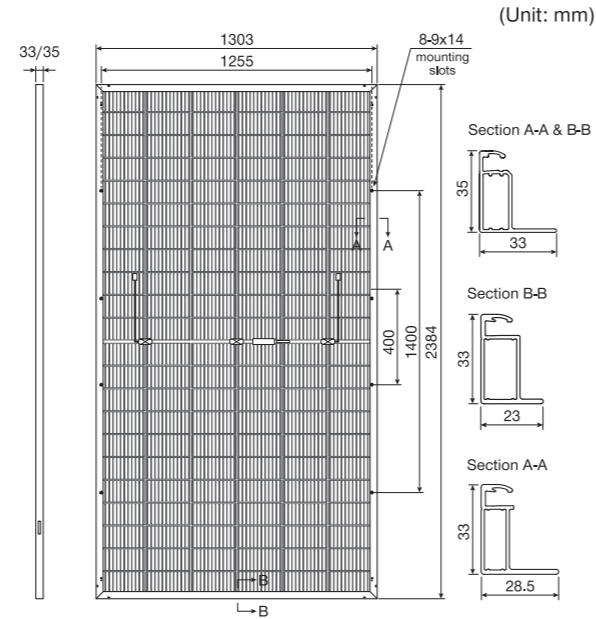
Power Range
700W ~ 720W

Power Output Tolerance
0W ~ +5W

Maximum Efficiency
23.18%

Structure Performance

Solar Cell Type	210mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2384×1303×35mm/33mm
Weight	38.2kg(35mm) / 37.8kg(33mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm ² , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm) / 33pcs(33mm)
Per Container(40'HQ)	558pcs(35mm) / 594pcs(33mm)

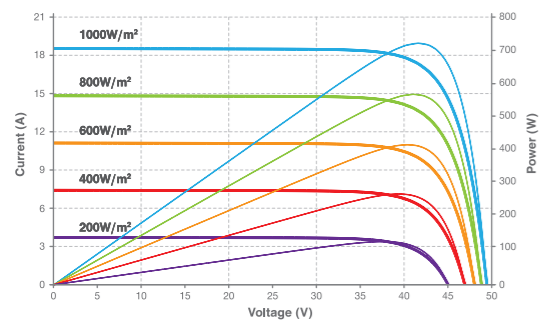


Electrical Performance Parameters

Model Type	700C(HBD)66(210)		705C(HBD)66(210)		710C(HBD)66(210)		715C(HBD)66(210)		720C(HBD)66(210)	
	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power P_{max} (W)	700	535	705	539	710	543	715	547	720	551
Max. Power Voltage V_{MP} (V)	40.07	37.66	40.29	37.86	40.51	38.06	40.72	38.26	40.94	38.46
Max. Power Current I_{MP} (A)	17.47	14.21	17.50	14.24	17.53	14.27	17.56	14.30	17.59	14.33
Open Circuit Voltage V_{OC} (V)	48.60	46.07	48.82	46.28	49.03	46.50	49.24	46.71	49.45	46.92
Short Circuit Current I_{SC} (A)	18.37	14.81	18.41	14.85	18.45	14.89	18.49	14.93	18.53	14.97
Module Efficiency (%)	22.53		22.70		22.86		23.02		23.18	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (720C)



Bifacial Output-rearside Power Gain

5%	Maximum Power P_{max} (W)	735	740	746	751	765
	Module Efficiency (%)	23.66%	23.83%	24.00%	24.17%	24.34%
10%	Maximum Power P_{max} (W)	770	776	781	787	792
	Module Efficiency (%)	24.79%	24.96%	25.14%	25.32%	25.50%
25%	Maximum Power P_{max} (W)	875	881	888	894	900
	Module Efficiency (%)	28.17%	28.37%	28.57%	28.77%	28.97%

Temperature Characteristics

Nominal Module Operating Temperature	44±2°C	Temperature Coefficient (V_{oc})	-0.25%
Temperature Coefficient (I_{sc})	+0.043%	Temperature Coefficient (P_{max})	-0.30%

Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

210R N-type Bifacial Module (66)

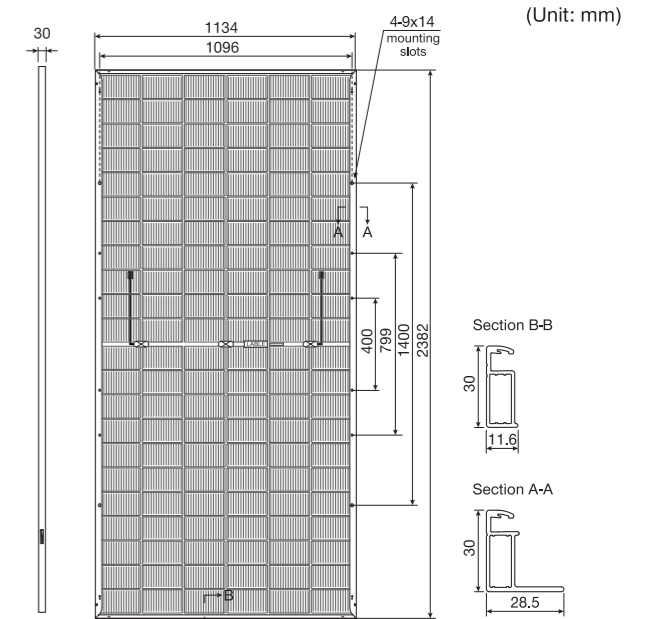
Power Range
595W ~ 615W

Power Output Tolerance
0W ~ +5W

Maximum Efficiency
22.77%

Structure Performance

Solar Cell Type	210R N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2382×1134×30mm
Weight	32.5kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm ² , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs (horizontal packing) / 720pcs (vertical packing)

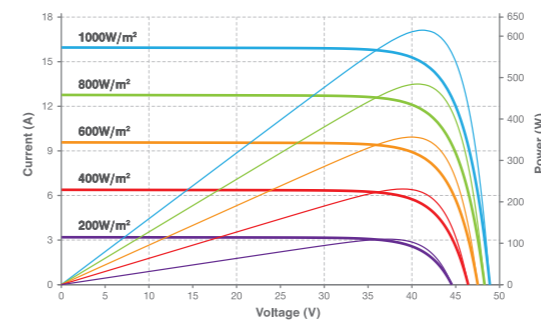


Electrical Performance Parameters

Model Type	595C(HBD)66(210R)		600C(HBD)66(210R)		605C(HBD)66(210R)		610C(HBD)66(210R)		615C(HBD)66(210R)	
	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power P_{max} (W)	595	448	600	452	605	456	610	460	615	464
Max. Power Voltage V_{MP} (V)	40.26	37.62	40.38	37.77	40.51	37.94	40.64	38.10	40.76	38.26
Max. Power Current I_{MP} (A)	14.78	11.91	14.86	11.97	14.94	12.02	15.01	12.08	15.09	12.13
Open Circuit Voltage V_{OC} (V)	48.29	45.82	48.42	45.95	48.55	46.07	48.69	46.20	48.82	46.33
Short Circuit Current I_{SC} (A)	15.63	12.60	15.71	12.68	15.80	12.75	15.89	12.82	15.98	12.89
Module Efficiency (%)	22.03		22.21		22.40		22.58		22.77	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (615C)



Bifacial Output-rearside Power Gain

5%	Maximum Power P_{max} (W)	625	630	635	641	646
	Module Efficiency (%)	23.13%	23.32%	23.52%	23.71%	23.91%
10%	Maximum Power P_{max} (W)	655	660	666	671	677
	Module Efficiency (%)	24.23%	24.43%	24.64%	24.84%	25.04%
25%	Maximum Power P_{max} (W)	744	750	756	763	769
	Module Efficiency (%)	27.53%	27.77%	28.00%	28.23%	28.46%

Temperature Characteristics

Nominal Module Operating Temperature	44±2°C	Temperature Coefficient (V_{oc})	-0.25%
Temperature Coefficient (I_{sc})	+0.043%	Temperature Coefficient (P_{max})	-0.30%

Maximum Parameters

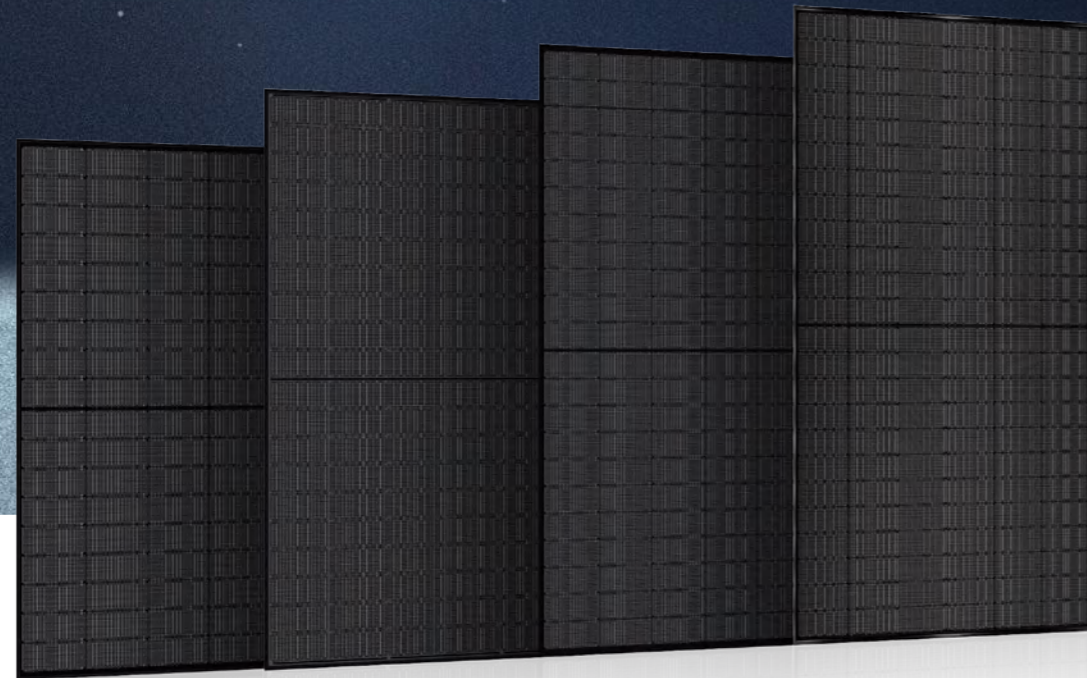
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

Pure Black series

Aesthetic Design, Darker, Pure, Seamless Integration

The LESSO Solar Pure Black series aims to perfectly integrates into environments to bring premium technology and modernity to buildings.

The Pure Black series adopts 182mm size wafers relies on TOPCon technology.



TOPCon Technology
Higher Power Generation



MBB Technology
Reducing String & Busbar Loss



Highly-resistant Black Crystal Material
Modernity to Buildings



Even Cloudy or Foggy Days
Better Weak Illumination Response



Zero LID
Increase Power Generation



Better Temperature Coefficient
More Power Generation



Higher Power Output
Lower BOS Cost



Multiple Weather Resistance Tests
Wider Applicability



Double-sided Generation
Powerfully Energy Boost

Power Range
420W ~ 650W

Maximum Efficiency
23.25%

12 years product workmanship warranty

30 years linear power output warranty

1% 1st-year degradation 0.40% annual degradation

Pure Black Series Mainstream Products

Product	Power (W)	Maximum Efficiency	Size (mm)
182 N-type (54) Pure Black single glass 182 N-type (54) Pure Black double glass	420 - 440	22.53%	1722x1134x35/30
182 N-type (60) Pure Black single glass 182 N-type (60) Pure Black double glass	470 - 490 465 - 485	22.63% 22.40%	1909x1134x35/30
182 N-type (66) Pure Black single glass 182 N-type (66) Pure Black double glass	515 - 535	22.53%	2094x1134x35/30
182 N-type (72) Pure Black single glass 182 N-type (72) Pure Black double glass	565 - 585	22.65%	2278x1134x35/30
182 N-type (78) Pure Black single glass	630 - 650	23.25%	2465x1134x35
182 N-type (54) Pure Black bifacial single glass	420 - 440	22.53%	1722x1134x35/30
182 P-type (54) Pure Black single glass	400 - 410	21.00%	1722x1134x35/30
182 P-type (60) Pure Black single glass	445 - 455	21.02%	1909x1134x35/30
182 P-type (66) Pure Black single glass	490 - 500	21.06%	2094x1134x35/30
182 P-type (72) Pure Black single glass	535 - 545	21.10%	2278x1134x35/30
210 P-type (66) Pure Black single glass	640 - 650	20.92%	2384x1303x35/33

Note: see datasheet for details

182 Pure Black N-type Monofacial Module (54)

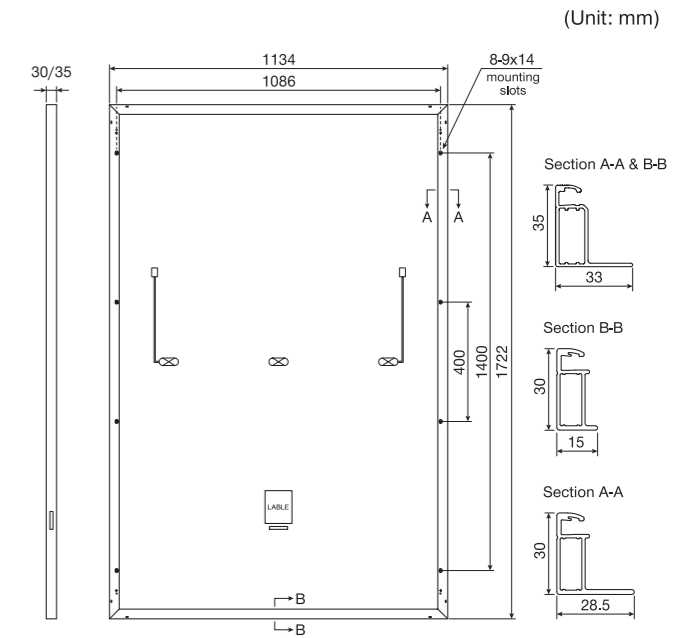
Power Range
420W ~ 440W

Power Output Tolerance
0W ~ +5W

Maximum Efficiency
22.53%

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6x18)
Module Dimension	1722x1134x35mm/30mm
Weight	21.7kg(35mm) / 20.7kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm ² , portrait 400mm(+), landscape 1400mm(+), 200mm(-), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm) / 36pcs(30mm)
Per Container(40'HQ)	806pcs(35mm) / 936pcs(30mm)

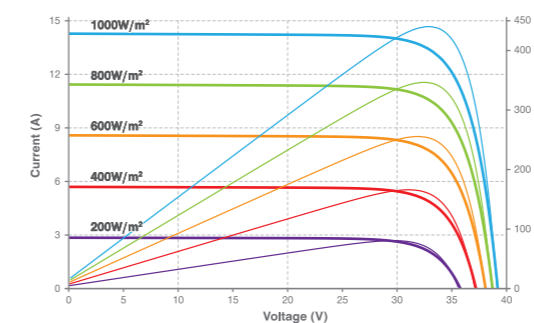


Electrical Performance Parameters

Model Type	420C(BPM)54(182)		425C(BPM)54(182)		430C(BPM)54(182)		435C(BPM)54(182)		440C(BPM)54(182)	
	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power P_{max} (W)	420	316	425	320	430	323	435	327	440	331
Max. Power Voltage V_{mp} (V)	31.82	29.68	32.01	29.86	32.20	29.91	32.38	30.09	32.57	30.27
Max. Power Current I_{mp} (A)	13.20	10.65	13.28	10.72	13.36	10.80	13.44	10.87	13.52	10.95
Open Circuit Voltage V_{oc} (V)	38.39	36.47	38.58	36.68	38.77	36.79	38.96	37.01	39.15	37.22
Short Circuit Current I_{sc} (A)	13.97	11.28	14.05	11.35	14.13	11.42	14.21	11.49	14.29	11.56
Module Efficiency (%)	21.51		21.76		22.02		22.28		22.53	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (440C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I_{sc})	+0.043%
Temperature Coefficient (V_{oc})	-0.25%
Temperature Coefficient (P_{max})	-0.30%

Maximum Parameters

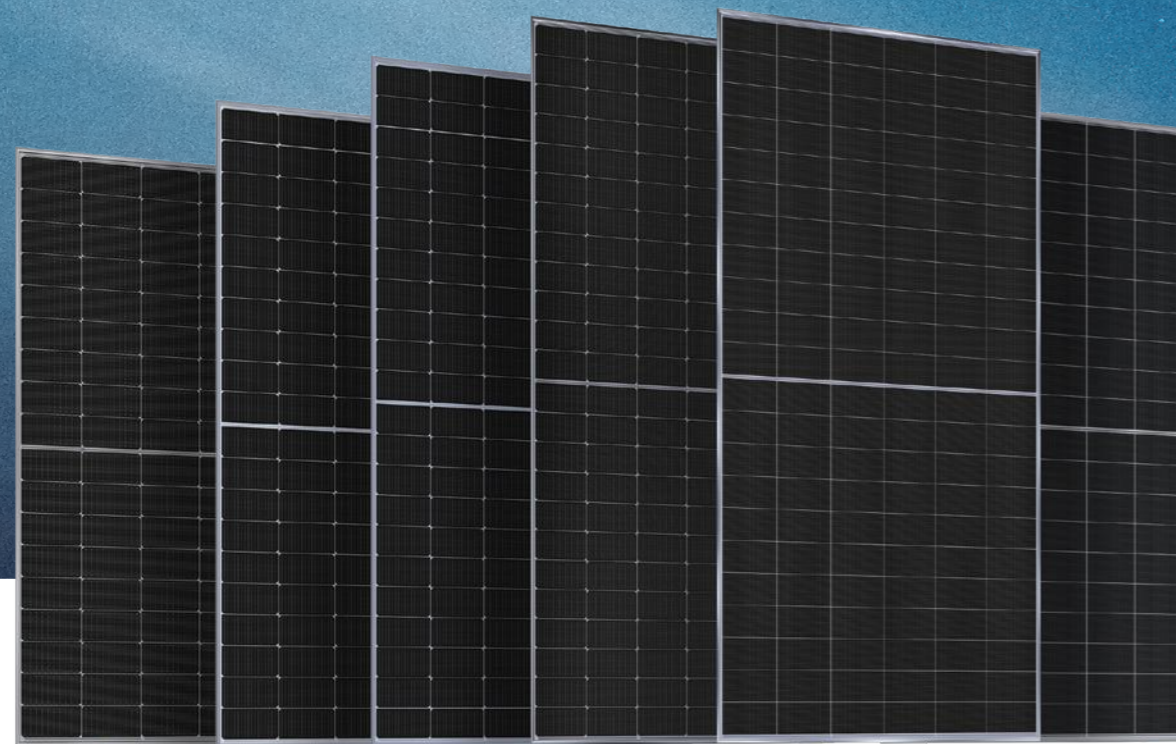
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

P series

Hardcore Energy, Reliable Technology

The LESSO Solar P series relies on MBB and half-cell technology, maximum efficiency reaches 21.48%. Stronger resistance to shade and lower risk of hot spots.

Series and parallel design, reducing the series RS and achieving higher power output and lower BOS cost.



MBB Technology
Reducing String & Busbar Loss



High Efficiency PERC
Better Resistance Against PID



Even Cloudy or Foggy Days
Better Weak Illumination Response



Zero LID
Increase Power Generation



Better Temperature Coefficient
More Power Generation



Higher Power Output
Lower BOS Cost




Multiple Weather Resistance Tests
Wider Applicability





Double-sided Generation
Powerfully Energy Boost

Power Range
405W ~ 665W

Maximum Efficiency
21.48%

 **12 years product workmanship warranty**

 **25 years (monofacial module) 30 years (bifacial module) linear power output warranty**

 **2% 1st-year degradation 0.55% annual degradation (monofacial module) 0.45% annual degradation (bifacial module)**

P Series Mainstream Products

Product	Power (W)	Maximum Efficiency	Size (mm)
182 P-type (54) single glass 182 P-type (54) double glass	405 - 415	21.25%	1722x1134x35/30
182 P-type (60) single glass 182 P-type (60) double glass	450 - 460	21.25%	1909x1134x35/30
182 P-type (66) single glass 182 P-type (66) double glass	495 - 505	21.27%	2094x1134x35/30
182 P-type (72) single glass 182 P-type (72) double glass	545 - 555	21.48%	2278x1134x35/30
210 P-type (54) single glass 210 P-type (54) double glass	535 - 545 530 - 540	21.34% 21.14%	1960x1303x35/30
210 P-type (60) single glass 210 P-type (60) double glass	595 - 605 590 - 600	21.38% 21.20%	2172x1303x35/30
210 P-type (66) single glass 210 P-type (66) double glass	655 - 665 650 - 660	21.41% 21.25%	2384x1303x35/33

Note: see datasheet for details

Project Highlights

Businesses can use the free electricity generated from Solar power stations directly, reducing consumption of electricity from the power grid, thereby enjoying immense savings on their electrical bill. If applicable, a Solar power station can even be connected to the power grid, allowing businesses to sell excess electricity to the grid to generate additional profit.



Project Capacity
600MW

Karamay Desert Solar Power Station (Phase I)

Location: Karamay, Xinjiang, China



Project Capacity
275KW

Solar Pumping Power Station

Location: Egypt



Changsha Roof Solar Power Station

Location: Changsha, Hunan, China
Project Capacity: 9.75MW



Maoming Logistics Roof Solar Power Station

Location: Maoming, Guangdong, China
Project Capacity: 6.58MW



Ducheng Roof Solar Power Station

Location: Yunan, Guangdong, China
Project Capacity: 5MW



Hongyu Logistics Park Roof Solar Power Station

Location: Guangdong, China
Project Capacity: 4.5MW



Haitian Roof Solar Power Station

Location: Foshan, Guangdong, China
Project Capacity: 6.14MW



Dingan Roof Solar Power Station

Location: Dingan, Hainan, China
Project Capacity: 6MW



Huanghuai market Roof Solar Power Station

Location: Henan, China
Project Capacity: 4.35MW



Mulingke Kemian Factory Roof Solar Power Station

Location: Heilongjiang, China
Project Capacity: 0.8MW

LESSO, BUILDING A SOLAR-POWERED WORLD



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