

LESSO

SOLAR PV MODULES

SIMPLIFIED VERSION

Lesso New Energy Global Trading Private Limited

One Raffles Quay, North Tower, #19-03, Singapore 048583

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

 www.lessosolar.com  info@lessosolar.com     LESSO Solar

**SOLAR SOLUTIONS
MANUFACTURER**



CONTENT

OVERVIEW

MANUFACTURING GIANT

GLOBAL FOOTPRINT

PRODUCTS

· N Series

· Pure Black Series

· P Series

PROJECT HIGHLIGHT

01

02

06

08

14

18

21

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

🏢

39 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



Wusha Factory
Foshan, China

6.4GW in Solar Modules



Heshan Factory
Jiangmen, China

6GW in Solar Modules **6GW** in Solar Cells



Indonesia Factory
Demak, Indonesia

2.4GW in Solar Modules



Jiulong Factory
Foshan, China

5GW (Planned) in Solar Modules **10GW** (Planned) in Solar Cells



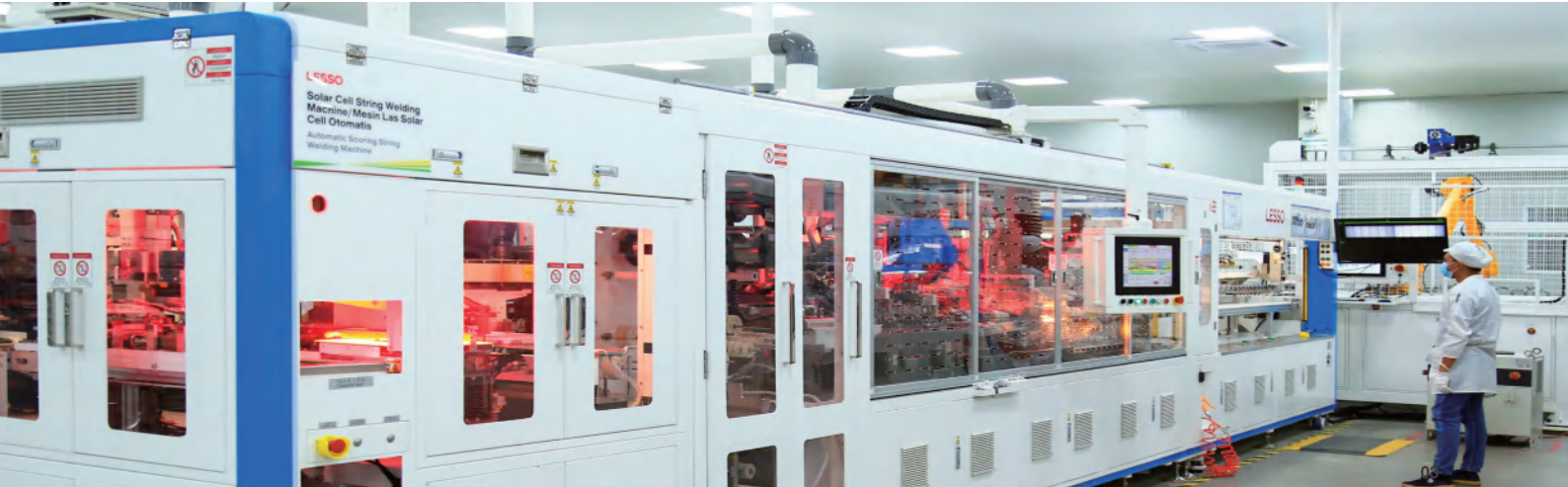
Chongkou Factory
Foshan, China

500MW in Solar Modules



Daba Factory
Foshan, China

3GWh+ in Solar Energy Storages **100,000pcs** in EV Charger



By utilizing only the finest raw materials and cutting-edge technology, we meticulously oversee every stage of the production process to provide our customers with the highest-quality products.



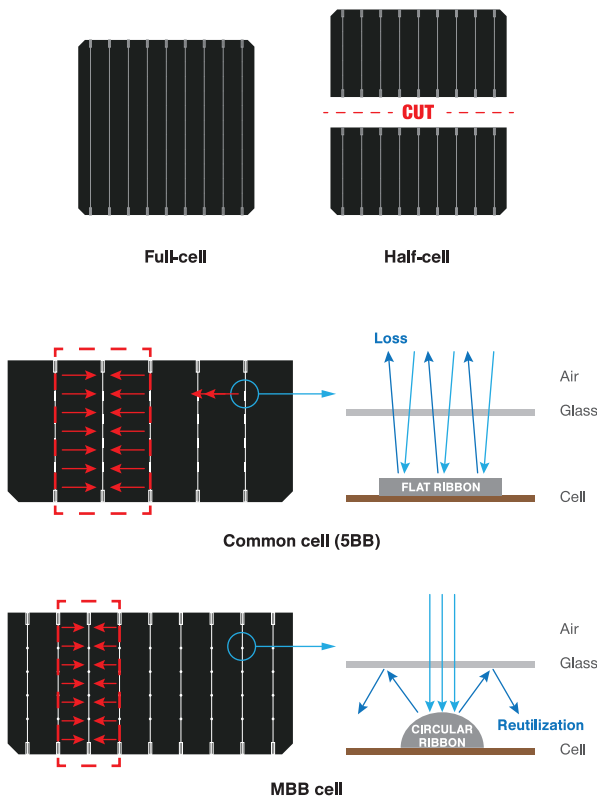
Our Certificates

- IEC 61215, IEC 61730
- ISO 9001:2015 Quality Management System
- ISO 14001:2015 Environment Management System
- ISO 45001:2018 Occupational Health and Safety Management System



HALF-CELL TECHNOLOGY

By adopting half-cell technology, electrical current density is reduced by 50%, resulting in a 25% decrease in internal power loss and an increase in rated output power.

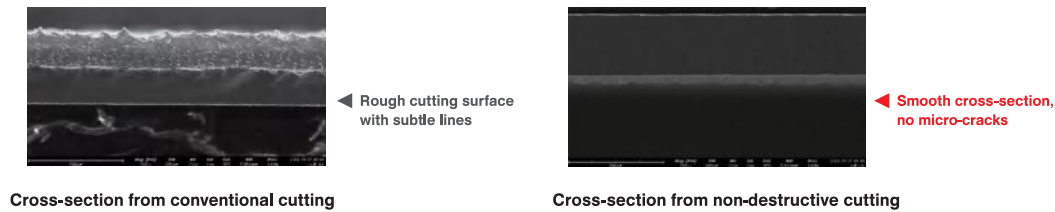


MBB TECHNOLOGY

MBB technology shortens the current collection path by over 50%, minimizes lateral resistance losses, and enhances component poweroutput. LESSO PV modules utilize circular ribbons to reduce shading areasand optimize light reflection for improved energy generation.

NON-DESTRUCTIVE CUTTING TECHNOLOGY

Featuring non-destructive cutting technology, this process ensures smooth cross-sections, reduces micro-crack risks, enhances cell strength. and delivers superior mechanical performance.



HIGH-DENSITY PACKAGING TECHNOLOGY

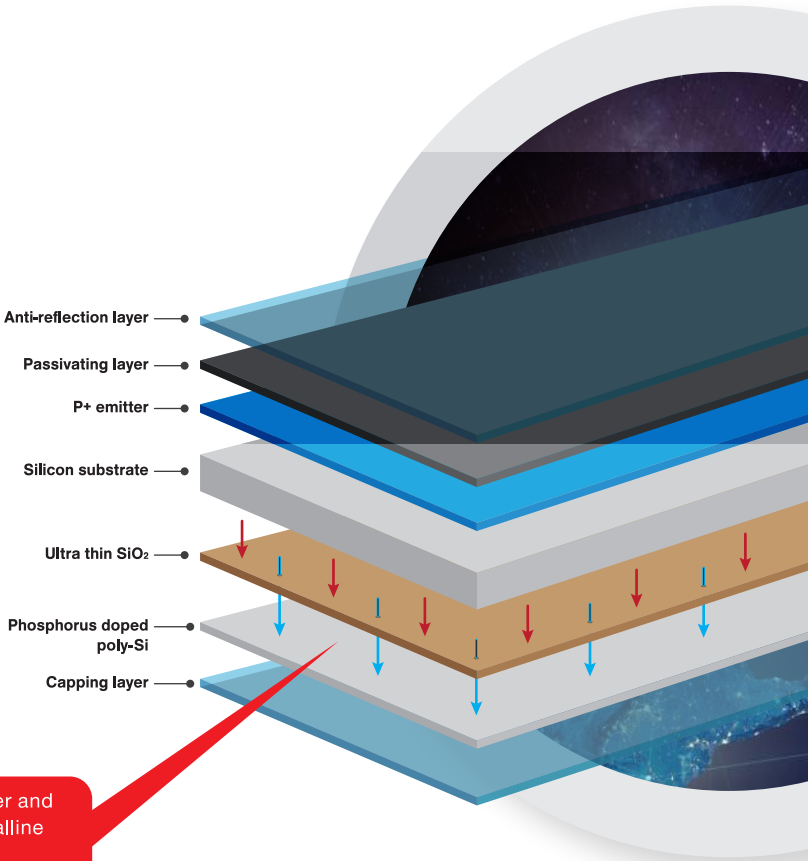
Through high-density packaging technology, the effective power-generating area of modules is maximized under the same footprint, improving efficiency without compromising reliability.



TOPCON TECHNOLOGY

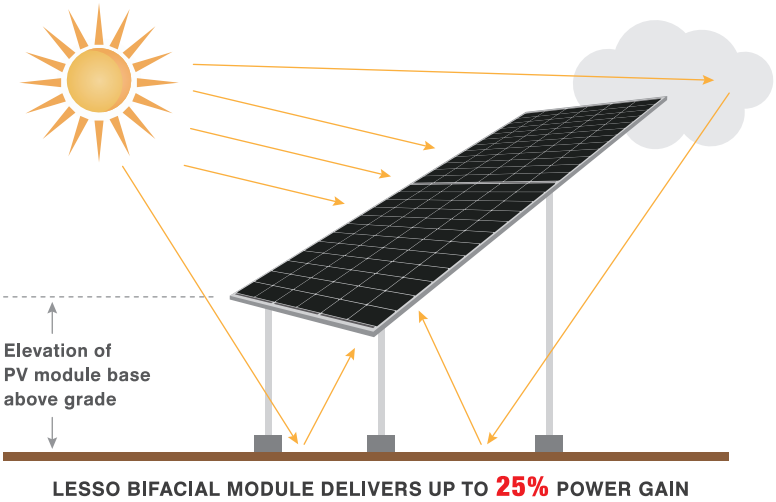
TOPCon cells employ advanced surface passivation technology to significantly reduce surface and metal contact recombination.

N-type modules exhibit superior degradation characteristics with only 1% first-year and 0.4% lower annual degradation rates compared to conventional counterparts, delivering 2.1% greater lifetime energy yield that directly enhances project profitability.



BIFACIAL TECHNOLOGY

Bifacial modules leverage reflected and scattered light, excelling in high-reflectivity environments with proven long-term reliability and superior quality.

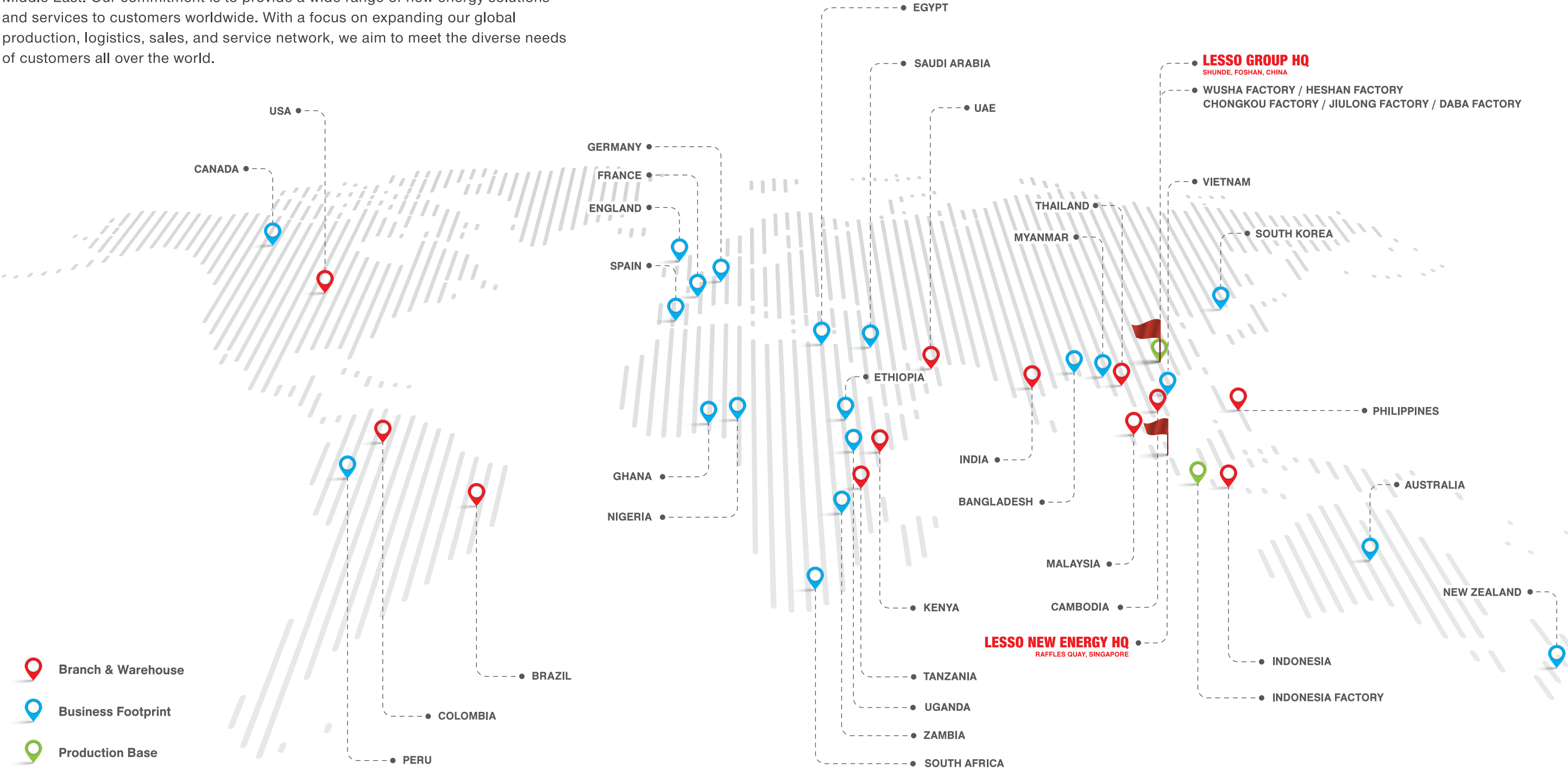


Power generation gain in different scenarios (%)

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

Unleash Unlimited Power, Pioneering Innovation

The LESSO Solar N Series leverages advanced TOPCon technology to achieve a maximum module efficiency of 23.18%. Featuring N-type cells with zero light-induced degradation (LID), this series ensures superior energy yield. With an annual degradation rate of just 1% in the first year and 0.4% thereafter, the N Series delivers exceptional long-term power generation performance, maximizing revenue potential 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



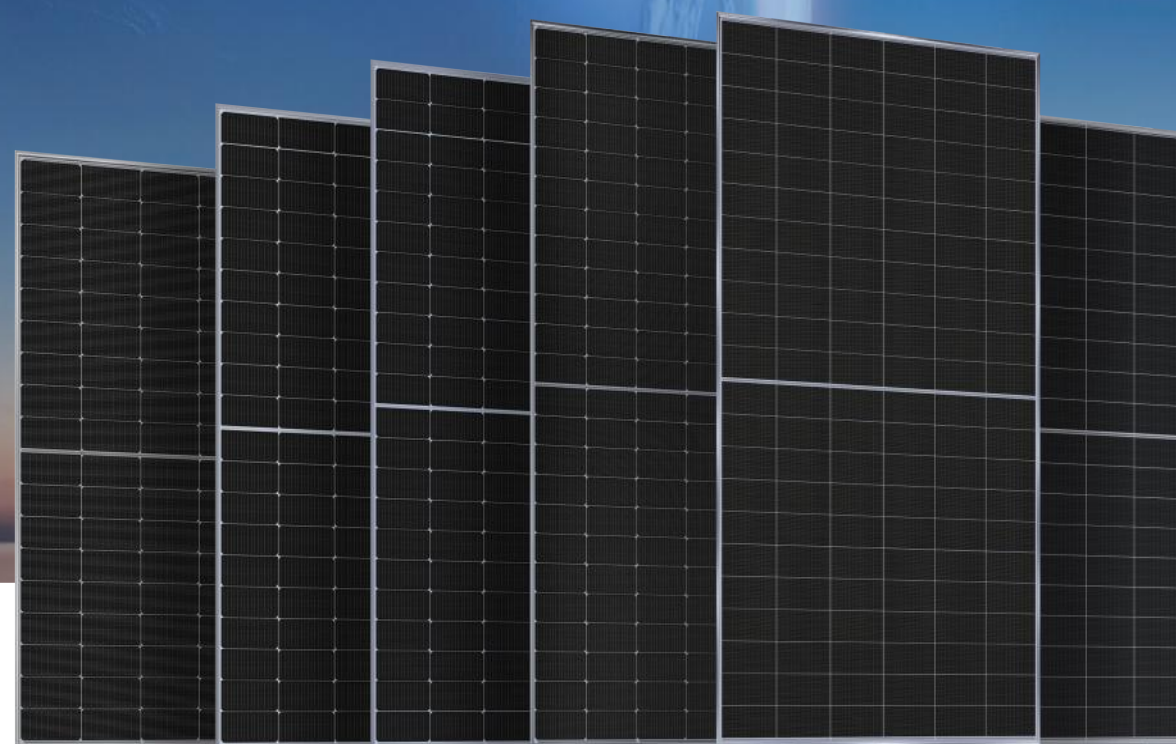
Higher Power Output
Lower BOS Cost



**Multiple Weather
Resistance Tests**
Wider Applicability



Double-sided Generation
Powerfully Energy Boost



Power Range
425W ~ 720W

Maximum Efficiency
23.18%

12 years product
workmanship warranty

25/30 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%	1722x1134x30
182 N-type (54) double glass			
182 N-type (60) single glass	475 - 495	22.87%	1909x1134x30
182 N-type (60) double glass			
182 N-type (66) single glass	525 - 545	22.95%	2094x1134x30
182 N-type (66) double glass			
182 N-type (72) single glass	575 - 595	23.03%	2278x1134x30
182 N-type (72) double glass			
182 N-type (78) double glass	625 - 640	22.90%	2465x1134x30
210 N-type (54) double glass	560 - 580	22.71%	1960x1303x30
210 N-type (60) double glass	620 - 640	22.61%	2172x1303x30
210 N-type (66) double glass	700 - 720	23.18%	2384x1303x33
210R N-type (54) single glass	490 - 510	22.95%	1960x1134x35
210R N-type (54) double glass			1960x1134x30
210R N-type (60) single glass	545 - 565	22.94%	2172x1134x35
210R N-type (60) double glass			2172x1134x30
210R N-type (66) single glass	595 - 615	22.77%	2382x1134x35
210R N-type (66) double glass			2382x1134x30

Note: see datasheet for details

182 N-type Bifacial Module (72)

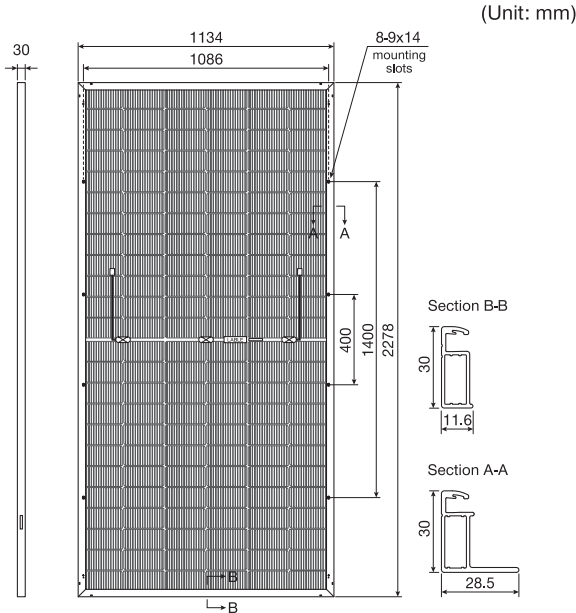
Power Range
575W ~ 595W

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	2278×1134×30mm
Weight	31.2kg
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	36pcs
Per Container(40'HQ)	720pcs

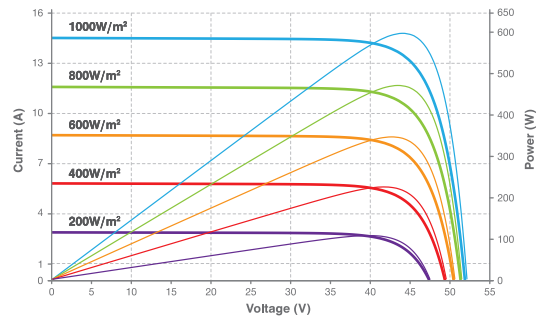


Electrical Performance Parameters

Model Type	575C(HBD)72(182)		580C(HBD)72(182)		585C(HBD)72(182)		590C(HBD)72(182)		595C(HBD)72(182)	
Testing Condition	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
Max. Power Voltage	V _{MP} (V)	42.60	40.02	42.75	40.17	42.89	40.32	43.04	40.47	43.18
Max. Power Current	I _{MP} (A)	13.50	10.82	13.57	10.88	13.64	10.94	13.71	11.00	13.78
Open Circuit Voltage	V _{OC} (V)	51.23	48.66	51.43	48.85	51.63	49.04	51.83	49.23	52.03
Short Circuit Current	I _{SC} (A)	14.27	11.51	14.33	11.56	14.39	11.61	14.45	11.66	14.51
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



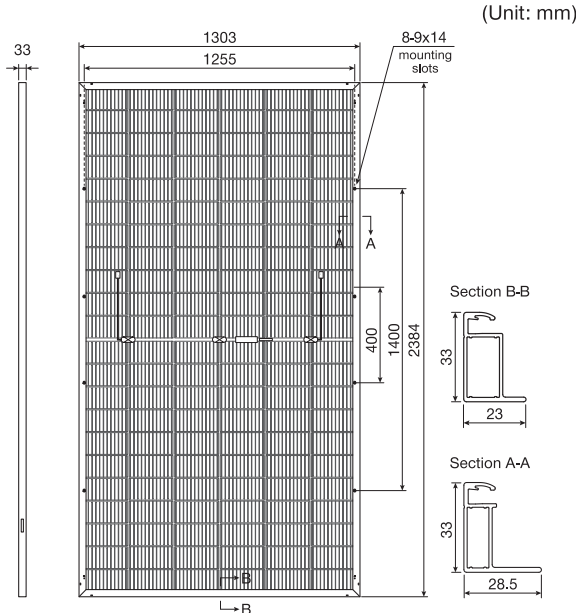
Power Output Tolerance
0W ~ +5W



Maximum Efficiency
23.18%

Structure Performance

Solar Cell Type	210mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2384×1303×33mm
Weight	37.8kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², 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	33pcs
Per Container(40'HQ)	594pcs

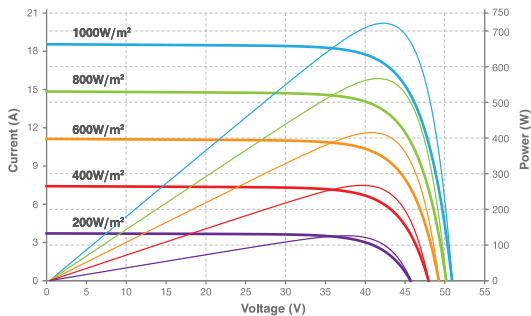


Electrical Performance Parameters

Model Type		700C(HBD)66(210)		705C(HBD)66(210)		710C(HBD)66(210)		715C(HBD)66(210)		720C(HBD)66(210)	
Testing Condition		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)	50.34	46.07	50.55	46.28	50.76	46.50	50.97	46.71	51.18	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	756
	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



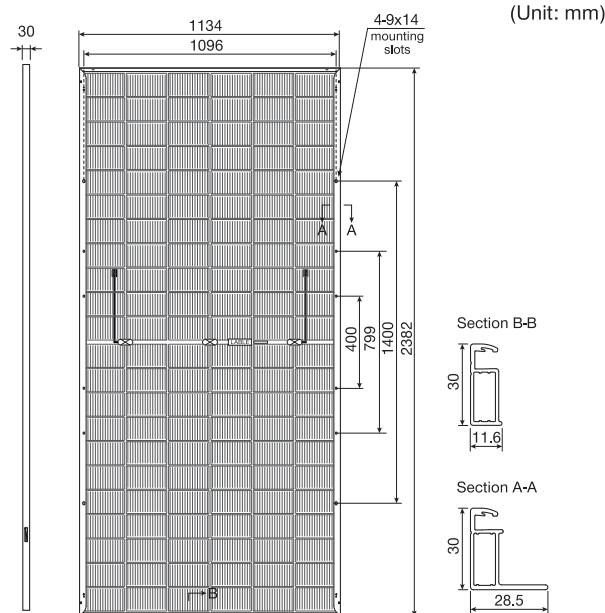
Power Output Tolerance
0W ~ +5W



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	4mm², 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)	576pcs (horizontal packing) / 720pcs (vertical packing)

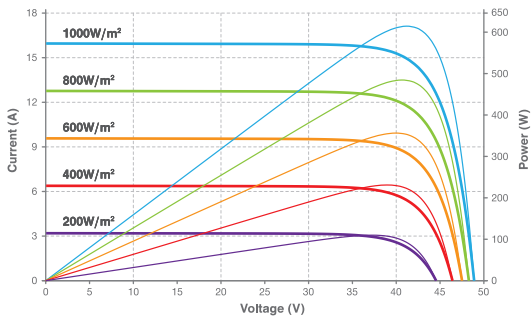


Electrical Performance Parameters

Model Type		595C(HBD)66(210R)		600C(HBD)66(210R)		605C(HBD)66(210R)		610C(HBD)66(210R)		615C(HBD)66(210R)	
Testing Condition		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%

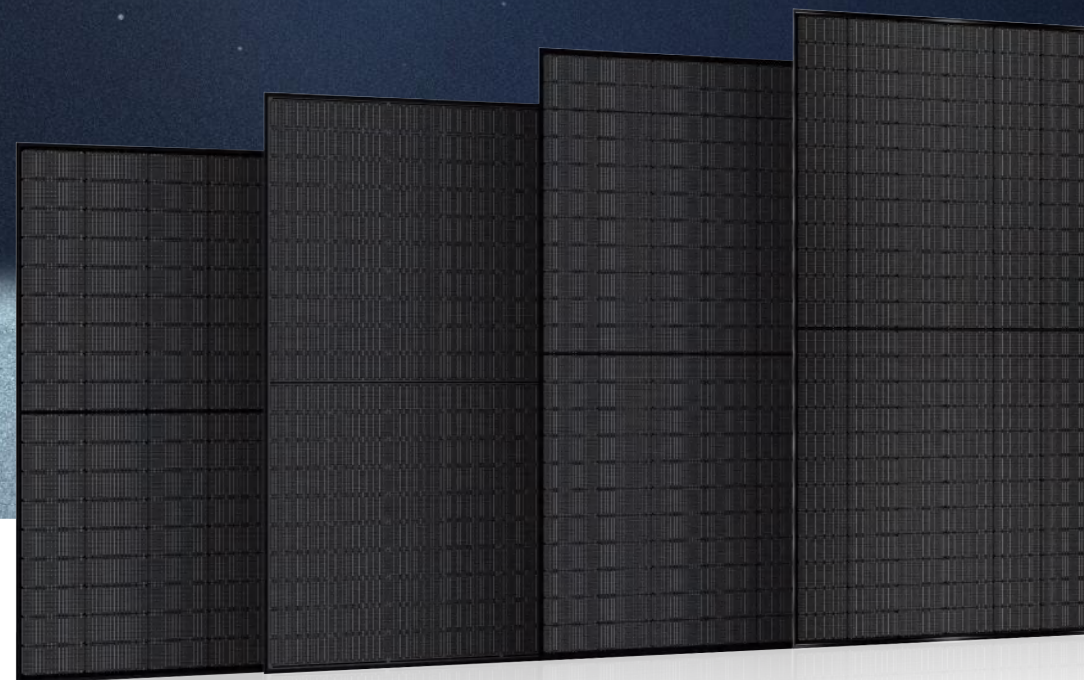
Maximum Parameters

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

Pure Black series

Elegant Aesthetics, Sleek Integration

The LESSO Solar Pure Black Series combines cutting-edge technology with minimalist design to seamlessly blend into modern architectural environments. Crafted for premium visual appeal, this series adopts 182mm wafers and TOPCon technology, ensuring high efficiency while maintaining a uniform, deep-black appearance. Its refined aesthetics and seamless integration empower buildings with both sophistication and sustainable energy performance.



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
400W ~ 635W



Maximum Efficiency
22.72%



12 years product
workmanship warranty



25/30 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	415 - 435	22.28%	1722x1134x30
182 N-type (54) Pure Black double glass	420 - 435		
182 N-type (60) Pure Black single glass	465 - 485	22.40%	1909x1134x30
182 N-type (60) Pure Black double glass	470 - 485		
182 N-type (66) Pure Black single glass	515 - 535	22.53%	2094x1134x30
182 N-type (66) Pure Black double glass	520 - 535		
182 N-type (72) Pure Black single glass	565 - 585	22.65%	2278x1134x30
182 N-type (72) Pure Black double glass	570 - 585		
182 N-type (78) Pure Black double glass	620 - 635	22.72%	2465x1134x30
182 N-type (54) Pure Black bifacial single glass	415 - 435	22.28%	1722x1134x30
182 P-type (54) Pure Black single glass	400 - 410	21.00%	1722x1134x30
182 P-type (60) Pure Black single glass	445 - 455	21.02%	1909×1134×30
182 P-type (66) Pure Black single glass	490 - 500	21.06%	2094×1134×30
182 P-type (72) Pure Black single glass	535 - 545	21.10%	2278×1134×30

Note: see datasheet for details

182 Pure Black N-type Monofacial Module (54)



Power Range
415W ~ 435W



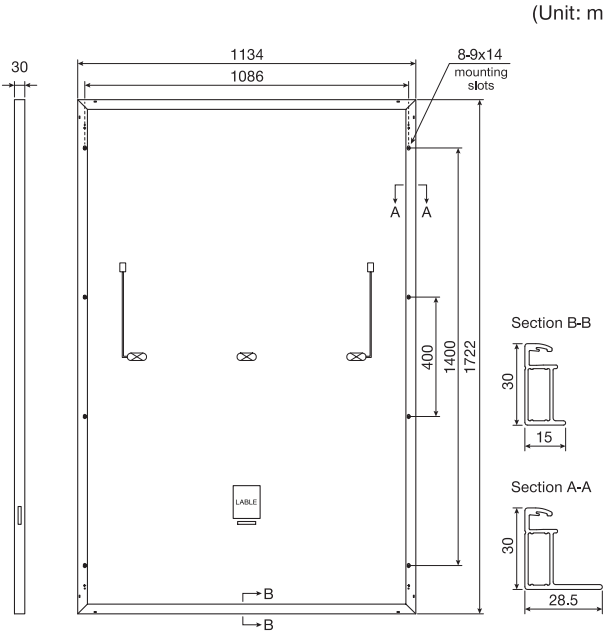
Power Output Tolerance
0W ~ +5W



Maximum Efficiency
22.28%

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×30mm
Weight	20.7kg
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 (+) 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)	936pcs

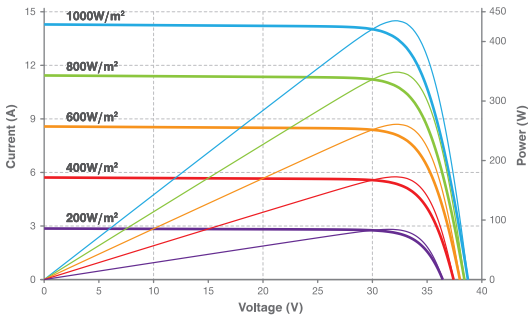


Electrical Performance Parameters

Model Type		415C(BPM)54(182)		420C(BPM)54(182)		425C(BPM)54(182)		430C(BPM)54(182)		435C(BPM)54(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P _{MAX} (W)	415	312	420	316	425	320	430	323	435	327
Max. Power Voltage	V _{MP} (V)	31.64	29.52	31.82	29.68	32.01	29.86	32.20	29.91	32.38	30.09
Max. Power Current	I _{MP} (A)	13.12	10.57	13.20	10.65	13.28	10.72	13.36	10.80	13.44	10.87
Open Circuit Voltage	V _{OC} (V)	38.20	36.29	38.39	36.47	38.58	36.68	38.77	36.79	38.96	37.01
Short Circuit Current	I _{SC} (A)	13.89	11.21	13.97	11.28	14.05	11.35	14.13	11.42	14.21	11.49
Module Efficiency	(%)	21.25		21.51		21.76		22.02		22.28	

* 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 (435C)



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%

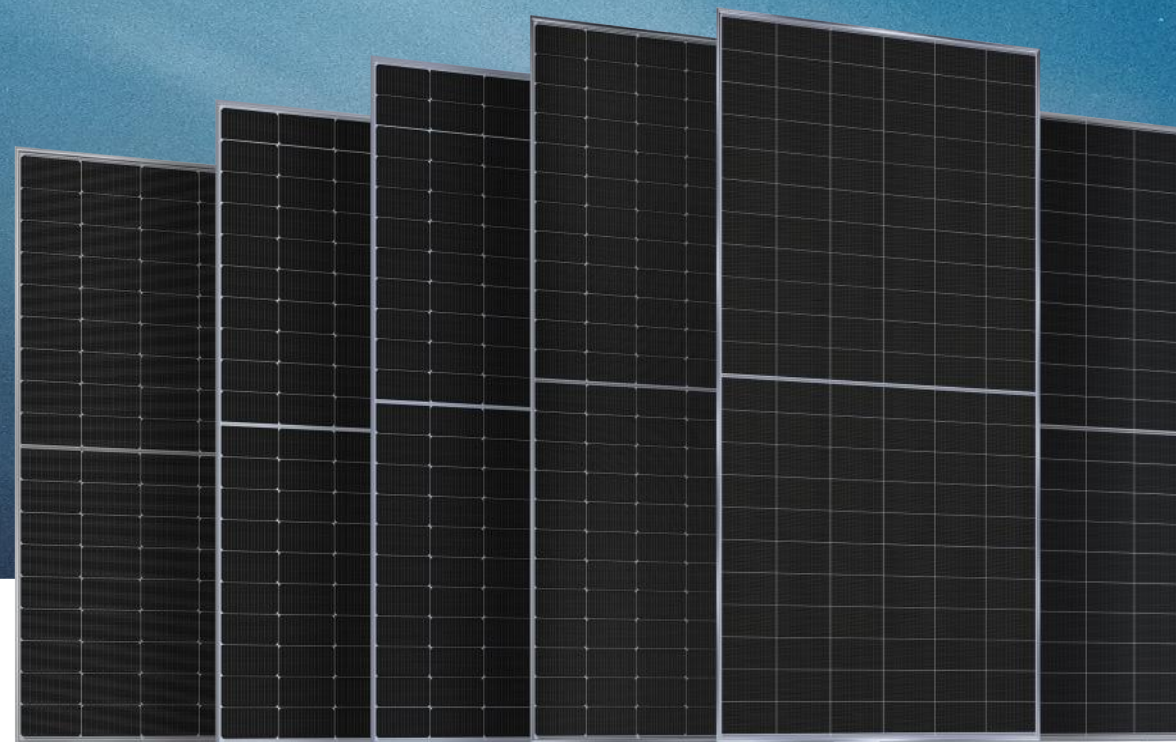
Maximum Parameters

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

P series

Robust Performance, Proven Reliability

The LESSO Solar P Series utilizes MBB (multi-busbar) and half-cell technology to achieve a maximum efficiency of 21.48%. Engineered for resilience, it offers enhanced shade resistance and minimized hot spot risks. Its optimized series-parallel circuit design reduces internal resistance (R_s), enabling higher power output and lower balance of system (BOS) costs—ideal for projects demanding reliability and cost-efficiency.



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



25/30 years 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	405 - 415	21.25%	1722x1134x30
182 P-type (54) double glass			
182 P-type (60) single glass	450 - 460	21.25%	1909x1134x30
182 P-type (60) double glass			
182 P-type (66) single glass	495 - 505	21.27%	2094x1134x30
182 P-type (66) double glass			
182 P-type (72) single glass	545 - 555	21.48%	2278x1134x30
182 P-type (72) double glass			
210 P-type (54) single glass	535 - 545	21.34%	1960x1303x35
210 P-type (54) double glass			
210 P-type (60) single glass	595 - 605	21.38%	2172x1303x35
210 P-type (60) double glass			
210 P-type (66) single glass	655 - 665	21.41%	2384x1303x35
210 P-type (66) double glass			

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.



Karamay Desert Solar Power Station (Phase I)

Project Capacity
600MW

Location: Karamay, Xinjiang, China



New Community Concentrated Solar Power Generation System

Project Capacity
1MW

Location: Saraburi Province, Thailand



Rooftop Power Station Built in Indonesia's New Capital

Location: Kalimantan, Indonesia

Project Capacity
1MW



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



Snowflake Ice Factory Solar Power Station

Location: Phnom Penh, Cambodia
Project Capacity: 500kW



Solar Pumping Power Station

Location: Egypt
Project Capacity: 275kW



Haitian Roof Solar Power Station

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



Dingan Roof Solar Power Station

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

LESSO, BUILDING A SOLAR-POWERED WORLD

