

UBACLE GROUP

CANDO SOLAR PANELS

www.ubaclegroup.com



Big Eco Series

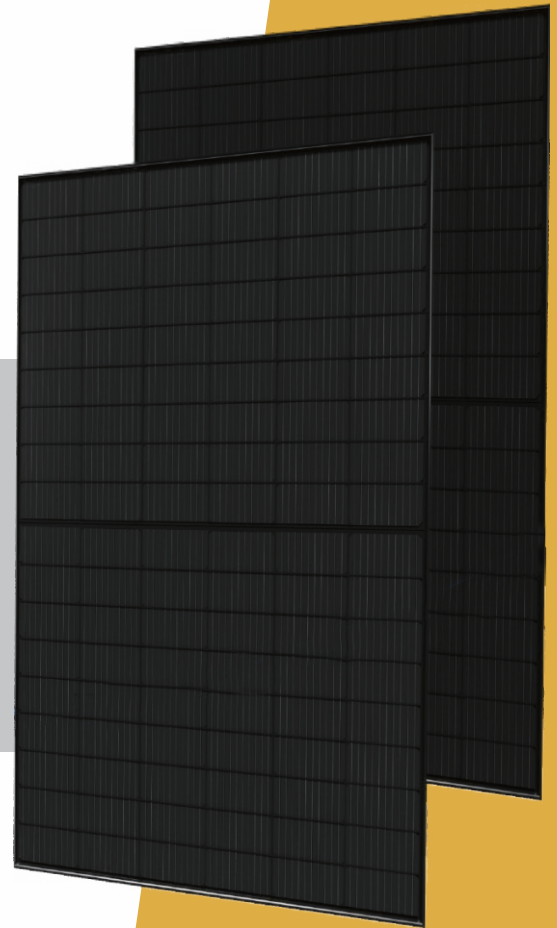
182HJT Solar Module

PRODUCT:

CDS-N1054D-TB

POWER RANGE:

420-440W



440W	22.5%	SMBB	HJT
Max Power Output	Max Panel Efficiency	Super Multi-busbar Technology	182 Wafer



Excellent energy efficiency

- No PID&LID;
- Market leading weak light effect and temperature coefficient (-0.24%/°C);
- 182mm large size and SMBB technology provide higher efficiency (22.5%)



Multi-busbar technology

- Extremely high light utilization;
- Greater power collection capability;
- Effectively improve power output and reliability



High double-sided rate 90%

- Additional power generation revenue>5%



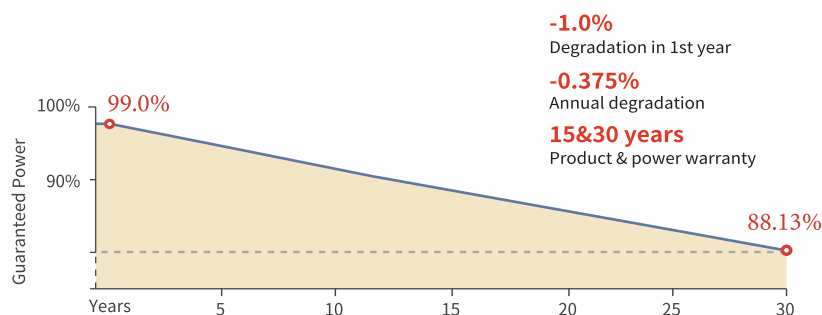
Printing technology

- Exclusive patent protection, available for pattern customization



Highest fire rating

- Class A



Certificates & Warranty

- IEC61215 2016&IEC61730 2016
- 15 years Product Workmanship Warranty
- 30 years Power Warranty



Electrical data(STC)

Max. Power (W)	420	425	430	435	440
Max. Power Voltage Vmp(V)	34.49	34.76	35.03	35.30	35.57
Max. Power Current Imp(A)	12.18	12.23	12.28	12.33	12.37
Open Circuit Voltage Voc(V)	40.56	40.84	41.12	41.40	41.68
Short Circuit Current Isc(A)	12.97	13.02	13.07	13.12	13.16
Module Efficiency (%)	21.4	21.7	21.9	22.2	22.5

*STC (Standard Test Condition): Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5
*Measurement Tolerance (±3.0%)

Electrical data(NOCT)

Max. Power (W)	321	325	329	333	337
Max. Power Voltage Vmp(V)	33.00	33.27	33.54	33.81	34.11
Max. Power Current Imp(A)	9.73	9.77	9.81	9.85	9.88
Open Circuit Voltage Voc(V)	38.95	39.22	39.49	39.76	40.03
Short Circuit Current Isc(A)	10.46	10.50	10.54	10.58	10.62

*NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s

Temperature Ratings

Power Tolerance(W)	0~+5
Temperature Coefficients of γPmp(%/°C)	-0.24
Temperature Coefficients of βVoc(%/°C)	-0.22
Temperature Coefficients of αIsc(%/°C)	+0.047
Max. Over-Current (A)	25
Bifacial Factor(%)	≥85

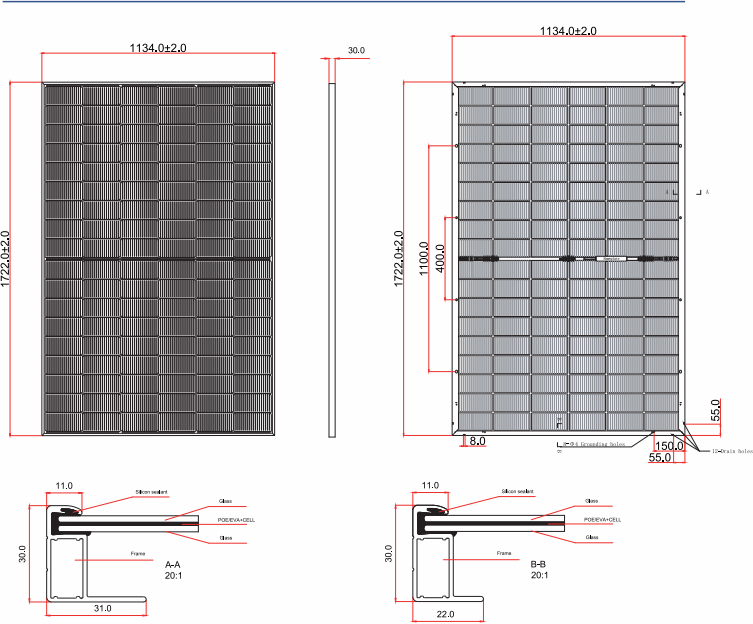
Mechanical Parameters

Cell Type(mm)	HJT 182 Half cell
NO. of Cells and Connections	108(6×18)
Dimensions(L*W*H) (mm)	1722*1134*30
Double AR Coated Glass(mm)	1.6
Cable Length (mm)	300
Weight(kg)	22
NO. of Diodes	3
Container 40'H (Pc)	36/936

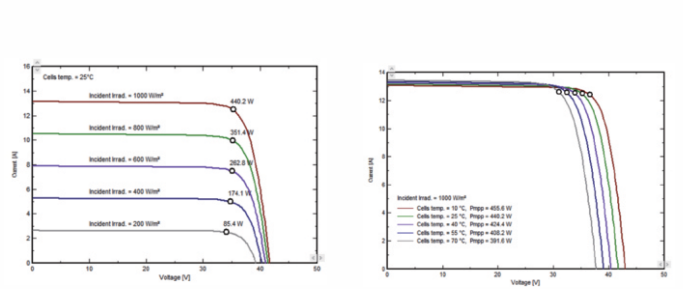
Working Condition

Maximum System Voltage(V)	1500V DC
Operating Temp(°C)	-40~+85
Max. Wind Load (Pa)	2400
Max. Snow Load (Pa)	5400

Dimensions of PV Module(mm)



Characteristic Curves(440W)



Big Eco Series

210 HJT Lead Free Solar Module

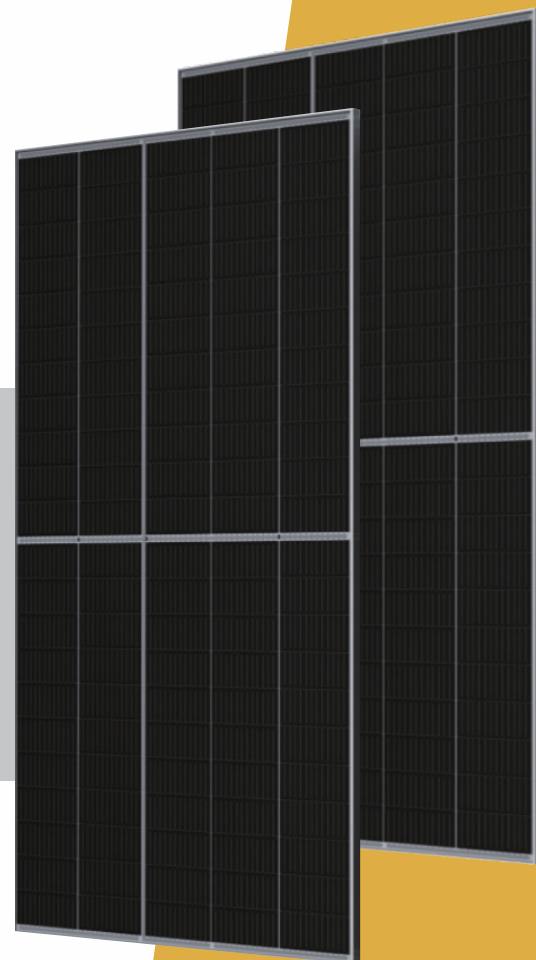
PRODUCT:

N1255D

POWER RANGE:

575-600W

*Recommend for C&I and Utility scale power station



600W

Max Power Output

23.0%

Max Panel Efficiency

LEAD FREE

Advanced
Busbar-free Technology

HJT

210 Wafer



Excellent Energy Efficiency

- No PID&LID
- Market leading weak light effect and temperature coefficient (-0.24%/°C)
- 210mm large size and Busbar-free technology provide higher efficiency (23.0%)



High Customer Value

- Lower LCOE (Levelized Cost of Energy), reduced BOS (Balance of System) cost, expedited ROI period



High Double-sided Rate 90%

- Additional power generation revenue > 5%



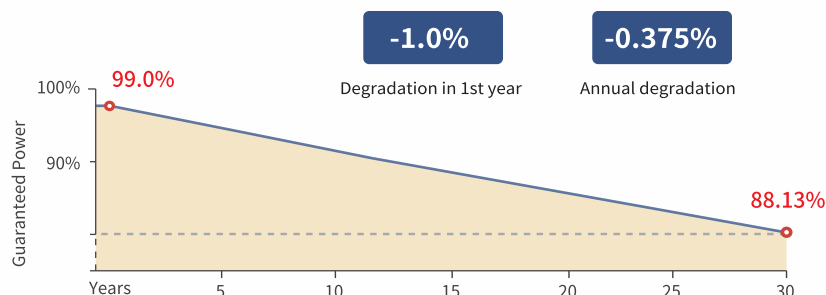
The Sustainable Choice

- Fluorine-free and lead-free products;
- Thinner silicon wafer (100 μm);
- Lower energy consumption (<400kg eq CO₂/kWc)



Highest Fire Rating

- Class A



15

15 years Product Warranty

30

30 years Power Warranty

Certificates & Warranty

IEC61215 2016&IEC61730 2016



Electrical data(STC)

Max. Power (W)	575	580	585	590	595	600
Max. Power Voltage Vmp (V)	35.46	35.55	35.73	35.90	36.08	36.26
Max. Power Current Imp (A)	16.22	16.32	16.38	16.44	16.50	16.55
Open Circuit Voltage Voc (V)	41.33	41.63	41.83	42.04	42.25	42.47
Short Circuit Current Isc (A)	17.22	17.35	17.42	17.48	17.55	17.62
Module Efficiency (%)	22.0	22.2	22.4	22.6	22.8	23.0

*STC (Standard Test Condition): Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5
 *Measurement Tolerance (±3.0%)

Electrical data(NOCT)

Max. Power (W)	440	444	448	452	455	459
Max. Power Voltage Vmp (V)	33.98	34.08	34.26	34.43	34.53	34.73
Max. Power Current Imp (A)	12.95	13.03	13.08	13.13	13.18	13.22
Open Circuit Voltage Voc (V)	39.69	39.98	40.17	40.38	40.58	40.79
Short Circuit Current Isc (A)	13.89	14.00	14.05	14.10	14.16	14.22

*NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s

Temperature Ratings

Power Tolerance (W)	0~+5
Temperature Coefficients of γ Pmp (%/°C)	-0.24
Temperature Coefficients of β Voc (%/°C)	-0.22
Temperature Coefficients of α Isc (%/°C)	+0.047
Max. Over-Current (A)	35
Bifacial Factor (%)	≥85

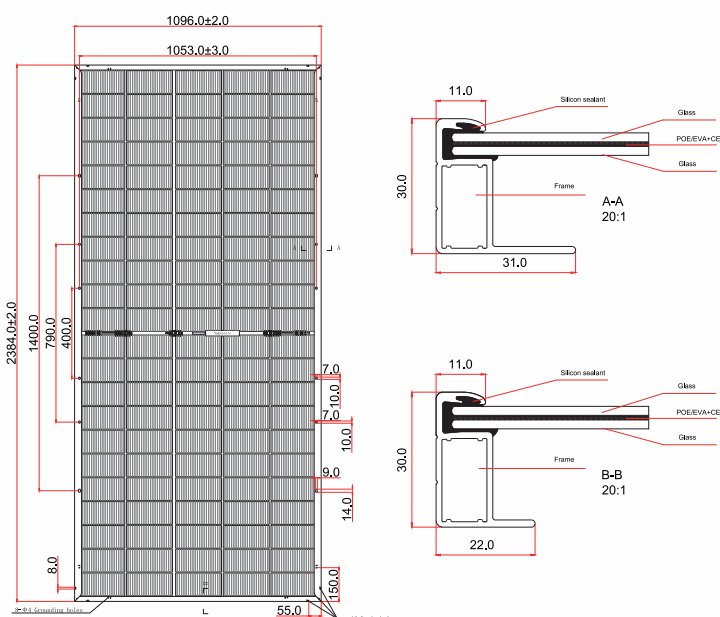
Mechanical Parameters

Cell Type (mm)	HJT 210x105
NO. of Cells and Connections	110(5x22)
Dimensions(L*W*H) (mm)	2384x1096x30
Double AR Coated Glass (mm)	2.0+2.0
Cable Length (mm)	300,Length can be customized
Weight (kg)	32.6
NO. of Diodes	3
Container 40'HQ (pcs)	36/720

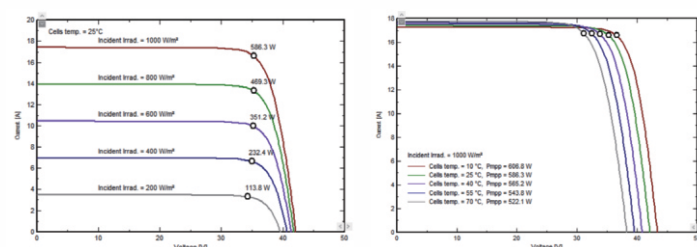
Working Condition

Maximum System Voltage (V)	1500V DC
Operating Temp (°C)	-40~+85
Max. Wind Load (Pa)	2400
Max. Snow Load (Pa)	5400

Dimensions of PV Module(mm)



Characteristic Curves(585W)



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Big Eco Series

210 HJT Lead Free Solar Module

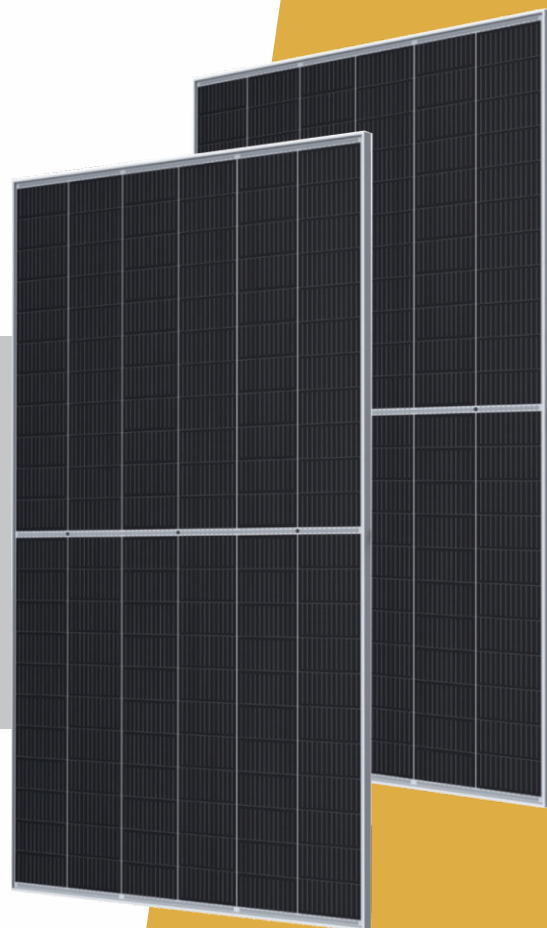
PRODUCT:

N1266D

POWER RANGE:

695-720W

*Recommend for C&I and Utility scale power station



720W

Max Power Output

23.2%

Max Panel Efficiency

LEAD FREE

Advanced
Busbar-free Technology

HJT

210 Wafer



Excellent Energy Efficiency

- No PID&LID
- Market leading weak light effect and temperature coefficient (-0.24%/°C)
- 210mm large size and Busbar-free technology provide higher efficiency (23.2%)



High Customer Value

- Lower LCOE (Levelized Cost of Energy), reduced BOS (Balance of System) cost, expedited ROI period



High Double-sided Rate 90%

- Additional power generation revenue>5%



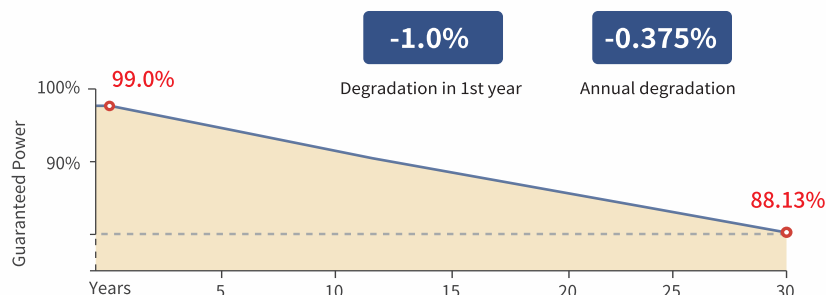
The Sustainable Choice

- Fluorine-free and lead-free products;
- Thinner silicon wafer (100 μ m);
- Lower energy consumption (<400kg eq CO2/kWc)



Highest Fire Rating

- Class A



15

15 years Product Warranty

30

30 years Power Warranty

Certificates & Warranty

IEC61215 2016&IEC61730 2016



Electrical data(STC)

Max. Power (W)	695	700	705	710	715	720
Max. Power Voltage Vmp (V)	42.61	42.79	42.97	43.15	43.33	43.51
Max. Power Current Imp (A)	16.32	16.36	16.41	16.46	16.51	16.55
Open Circuit Voltage Voc (V)	50.05	50.23	50.41	50.59	50.77	50.97
Short Circuit Current Isc (A)	17.38	17.43	17.47	17.52	17.57	17.62
Module Efficiency (%)	22.4	22.5	22.7	22.9	23.0	23.2

*STC (Standard Test Condition): Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5

*Measurement Tolerance (±3.0%)

Electrical data(NOCT)

Max. Power (W)	532	536	540	543	547	551
Max. Power Voltage Vmp (V)	40.83	41.01	41.19	41.30	41.48	41.68
Max. Power Current Imp (A)	13.03	13.07	13.11	13.15	13.19	13.22
Open Circuit Voltage Voc (V)	48.07	48.24	48.41	48.59	48.76	48.95
Short Circuit Current Isc (A)	14.02	14.06	14.09	14.13	14.17	14.22

*NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s

Temperature Ratings

Power Tolerance (W)	0~+5
Temperature Coefficients of γ_{Pmp} (%/°C)	-0.24
Temperature Coefficients of β_{Voc} (%/°C)	-0.22
Temperature Coefficients of α_{Isc} (%/°C)	+0.047
Max. Over-Current (A)	35
Bifacial Factor (%)	≥85

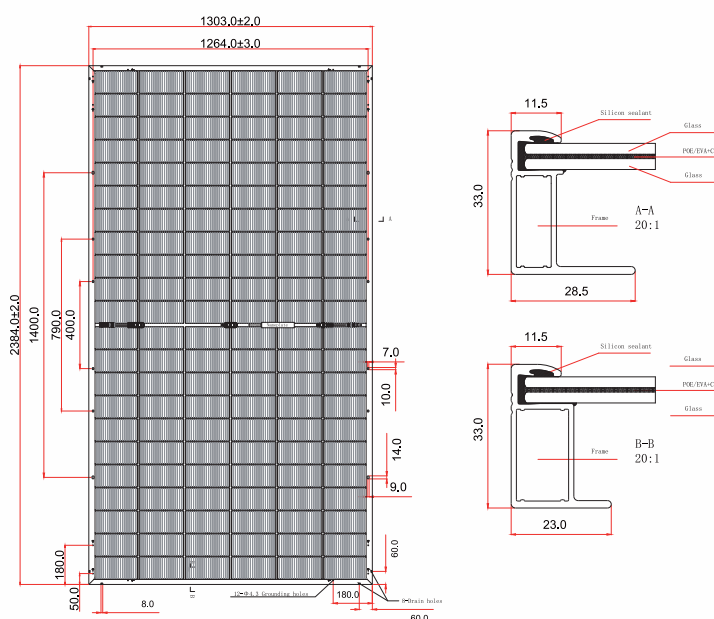
Mechanical Parameters

Cell Type (mm)	HJT 210x105
NO. of Cells and Connections	132(6x22)
Dimensions(L*W*H) (mm)	2384x1303x33
Double AR Coated Glass (mm)	2.0+2.0
Cable Length (mm)	300,Length can be customized
Weight (kg)	39.0
NO. of Diodes	3
Container 40'HQ (pcs)	33/594

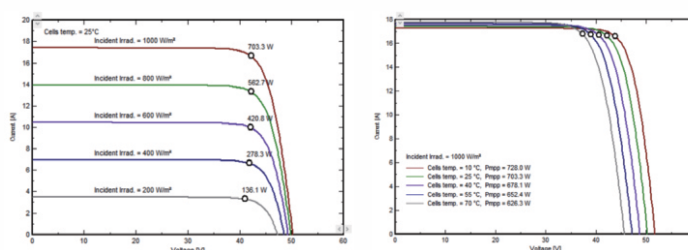
Working Condition

Maximum System Voltage (V)	1500V DC
Operating Temp (°C)	-40~+85
Max. Wind Load (Pa)	2400
Max. Snow Load (Pa)	5400

Dimensions of PV Module(mm)



Characteristic Curves(700W)



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Feather-Light Series

182 PERC Solar Module

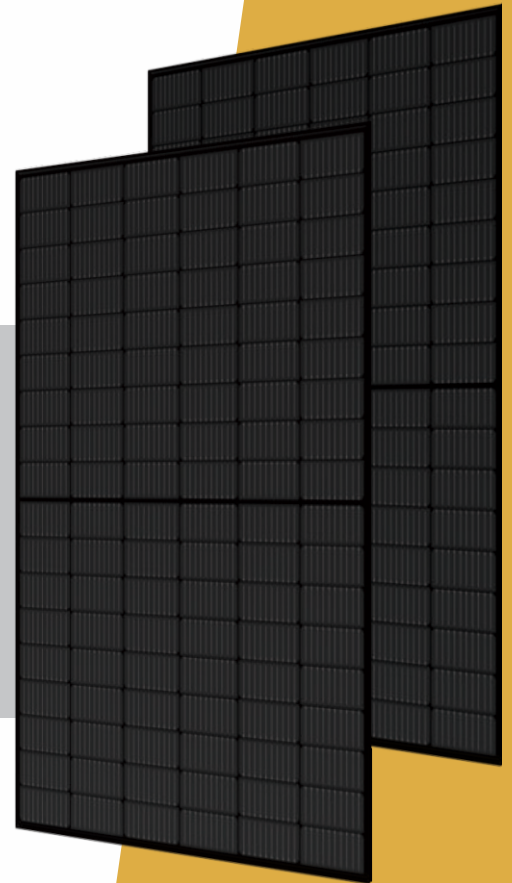
PRODUCT:

P1054L-BZ

POWER RANGE:

395-420W

*Recommend for C&I and residential rooftop



Excellent Energy Efficiency

- Market leading temperature coefficient(-0.35%/°C);
- 182mm large size and SMBB technology provide higher efficiency (21.5%)



Aesthetic Appearance Design

- Elegant design in all-black appearance, harmonious integration with the components of the building to provide an intense aesthetic experience



Multi-busbar Technology

- Extremely high light utilization;
- Greater power collection capability;
- Effectively improve power output and reliability



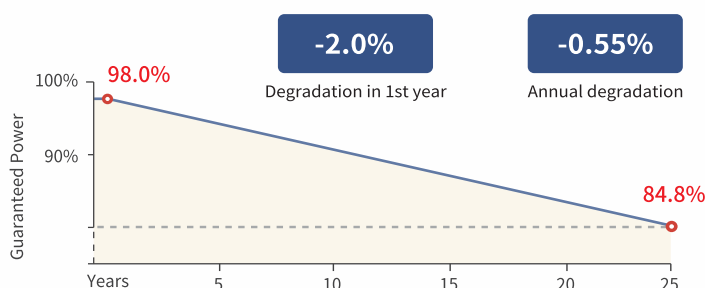
Flexible Module Design

- Small panel design, light in weight, flexible in transportation and loading



PID Resistance

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



15

15 years Product Warranty

25

25 years Power Warranty

Certificates & Warranty

IEC61215 2016&IEC61730 2016



Electrical Data(STC)

Max. Power (W)	395	400	405	410	415	420
Max. Power Voltage Vmp (V)	30.81	31	31.19	31.38	31.57	31.76
Max. Power Current Imp (A)	12.83	12.91	12.99	13.07	13.15	13.23
Open Circuit Voltage Voc (V)	36.89	37.07	37.25	37.43	37.61	37.79
Short Circuit Current Isc (A)	13.62	13.7	13.78	13.86	13.94	14.02
Module Efficiency (%)	20.3	20.5	20.8	21.0	21.3	21.5

*STC (Standard Test Condition): Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5

*Measurement Tolerance (±3.0%)

Electrical Data(NOCT)

Max. Power (W)	296	300	304	307	311	315
Max. Power Voltage Vmp (V)	28.88	29.1	29.29	29.41	29.62	29.81
Max. Power Current Imp (A)	10.25	10.31	10.38	10.44	10.5	10.57
Open Circuit Voltage Voc (V)	31.45	31.60	31.75	31.91	32.06	32.21
Short Circuit Current Isc (A)	10.99	11.05	11.12	11.18	11.25	11.31

*NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s

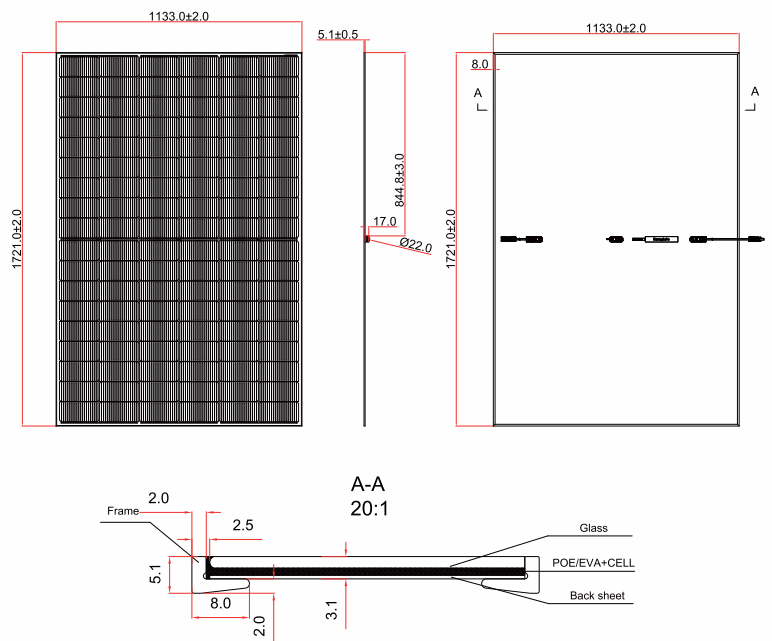
Temperature Ratings

Power Tolerance (W)	0~+5
Temperature Coefficients of γ_{Pmp} (%/°C)	-0.35
Temperature Coefficients of β_{Voc} (%/°C)	-0.28
Temperature Coefficients of α_{Isc} (%/°C)	+0.048
Max. Over-Current (A)	25

Mechanical Parameters

Cell Type (mm)	PERC 182 Half cell
NO. of Cells and Connections	108(6×18)
Dimensions(L*W*H) (mm)	1721*1133*5.1
Front AR Coated Glass (mm)	1.6
Backsheet (mm)	0.7
Cable Length (mm)	300, Length can be customized
Weight (kg)	12.5
NO. of Diodes	3
Container 40'HQ (pcs)	33/bottom, 31/top, 64/stack, 768/container
Container 20'GP (pcs)	33/bottom, 21/top, 54/stack, 324/container

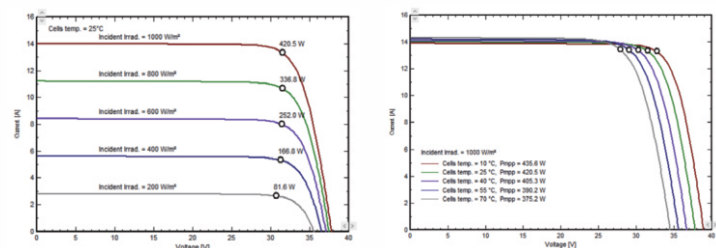
Dimensions of PV Module(mm)



Working Condition

Maximum System Voltage (V)	1500V DC
Operating Temp (°C)	-40~+85
Max. Wind Load (Pa)	2400
Max. Snow Load (Pa)	2400

Characteristic Curves(420W)



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Feather-Light Series

182 PERC Solar Module

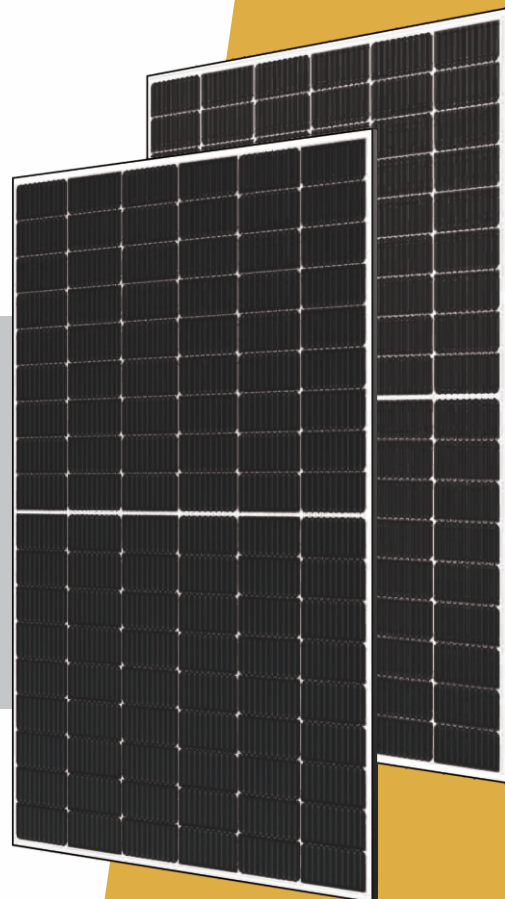
PRODUCT:

P1054L-WZ

POWER RANGE:

395-420W

*Recommend for C&I and residential rooftop



Excellent Energy Efficiency

- Market leading temperature coefficient(-0.35%/°C);
- 182mm large size and SMBB technology provide higher efficiency (21.5%)



Safety and Reliability

- 1.6mm reinforced glass, with stronger stress bearing and impact resistance capacity;
- Hail resistance capacity was verified through multiple scenarios



Multi-busbar Technology

- Extremely high light utilization;
- Greater power collection capability;
- Effectively improve power output and reliability



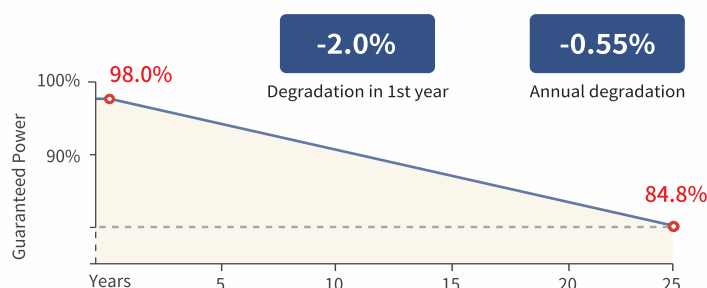
Flexible Module Design

- Small panel design, light in weight, flexible in transportation and loading



PID Resistance

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



15

15 years Product Warranty

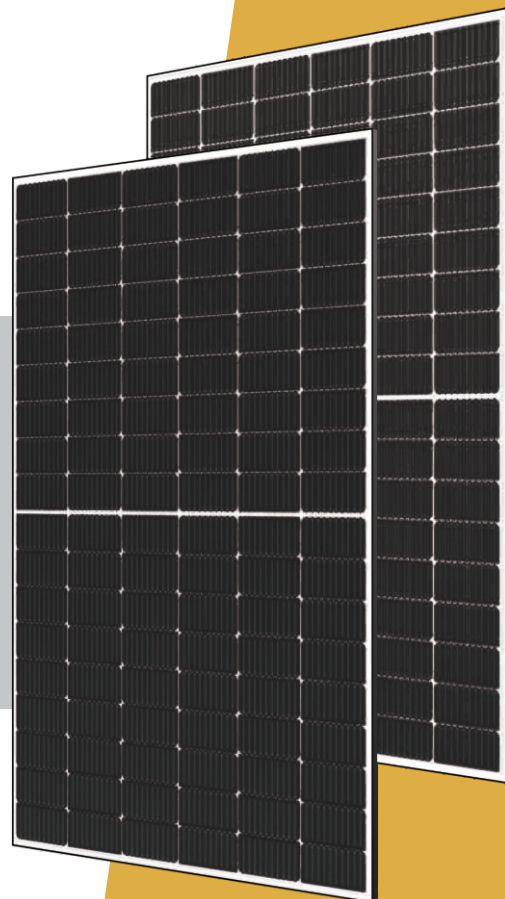
25

25 years Power Warranty

Certificates & Warranty

IEC61215 2016&IEC61730 2016





Feather-Light Series

182 PERC Solar Module

PRODUCT:

P1054L-WZ

POWER RANGE:

395-420W

*Recommend for C&I and residential rooftop

420W

Max Power Output

21.5%

Max Panel Efficiency

SMBB

Super Multi-busbar
Technology

PERC

182 Wafer



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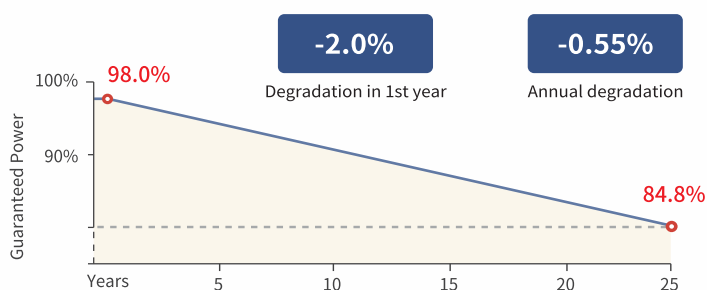
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Certificates & Warranty

IEC61215 2016&IEC61730 2016



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Max. Power (W)	296	300	304	307	311	315
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Max. Power Current Imp (A)	10.25	10.31	10.38	10.44	10.5	10.57
Open Circuit Voltage Voc (V)	31.45	31.60	31.75	31.91	32.06	32.21
Short Circuit Current Isc (A)	10.99	11.05	11.12	11.18	11.25	11.31

*NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s

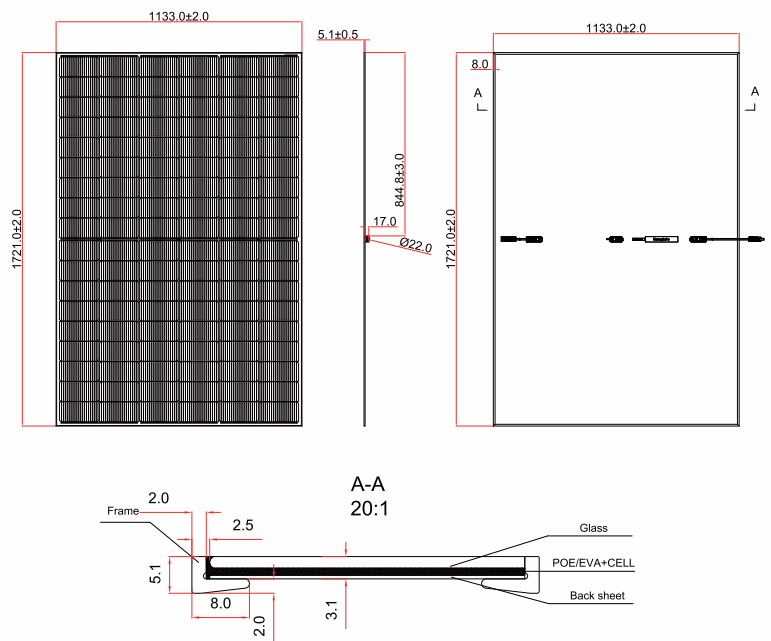
Temperature Ratings

Power Tolerance (W)	0~+5
Temperature Coefficients of γ_{Pmp} (%/°C)	-0.35
Temperature Coefficients of β_{Voc} (%/°C)	-0.28
Temperature Coefficients of α_{Isc} (%/°C)	+0.048
Max. Over-Current (A)	25

Mechanical Parameters

Cell Type (mm)	PERC 182 Half cell
NO. of Cells and Connections	108(6×18)
Dimensions (L*W*H) (mm)	1721*1133*5.1
Front AR Coated Glass (mm)	1.6
Backsheet (mm)	0.7
Cable Length (mm)	300, Length can be customized
Weight (kg)	12.5
NO. of Diodes	3
Container 40'HQ (pcs)	33/bottom, 31/top, 64/stack, 768/container
Container 20'GP (pcs)	33/bottom, 21/top, 54/stack, 324/container

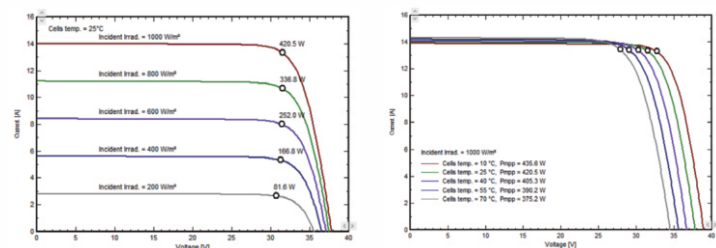
Dimensions of PV Module(mm)



Working Condition

Maximum System Voltage (V)	1500V DC
Operating Temp (°C)	-40~+85
Max. Wind Load (Pa)	2400
Max. Snow Load (Pa)	2400

Characteristic Curves(420W)



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Big Eco Series

182PERC Half-cell Monofacial Module

PRODUCT: CDS-P1072M
POWER RANGE: 540-560W

560W

Max Power output

21.7%

Max Panel Efficiency

MONOFACIAL

Half-cell

MBB

182 Wafer

Advantages



More Power Output

- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection
- Lower temperature coefficient, less shading loss



Reduced Hot Spot Loss

- Optimized electrical design and lower operating current for reduced hot spot loss



Longer Life-time Power Yield

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



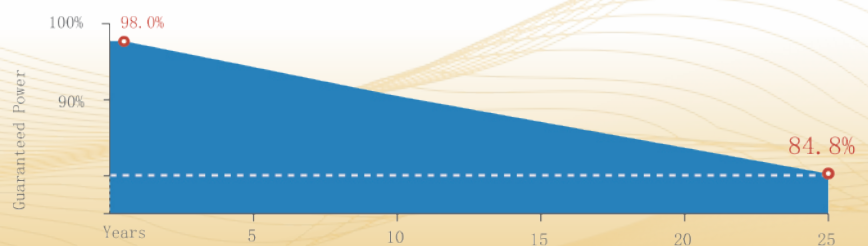
Maximum safety

- Minimized micro-cracks with innovative non-destructive cutting technology
- Resistant to harsh environments such as salt, ammonia, sand
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load



Certificates & Warranty

- IEC61215:2016&IEC61730:2016
- 12 year Product Workmanship Warranty
- 25year Power Warranty
- 2% first year degradation and 0.55% Annual Power Attenuation



182PERC Half-cell Monofacial Module

PRODUCT: CDS-P1072M
POWER RANGE: 540-560W

Max. Power Output Pmax (W)	540	545	550	555	560
Power Tolerance(W)	0~+5				
Max. Power Voltage Vmp(V)	41.04	41.21	41.38	41.55	41.72
Max. Power Current Imp(A)	13.16	13.23	13.3	13.36	13.43
Open Circuit Voltage Voc(V)	49.22	49.38	49.54	49.7	49.86
Short Circuit Current Isc(A)	13.98	14.04	14.1	14.16	14.22
Module Efficiency (%)	20.9	21.1	21.3	21.5	21.7

*Measurement Tolerance ($\pm 3.0\%$)

Max. Power Output Pmax (W)	413	417	421	421	429
Max. Power Voltage Vmp(V)	39.30	39.46	39.65	39.84	39.99
Max. Power Current Imp(A)	10.51	10.57	10.62	10.67	10.73
Open Circuit Voltage Voc(V)	47.27	47.42	47.58	47.73	47.89
Short Circuit Current Isc(A)	11.28	11.33	11.38	11.42	11.47

*NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

Temperature Coefficients of Pmp	-0.35%/°C
Temperature Coefficients of Voc	-0.28%/°C
Temperature Coefficients of Isc	+0.048%/°C
NOCT(Nominal Operating Cell Temperature)	43±2°C

Solar Cells	PERC 182×91mm
No. of cells	144pcs(6*24)
Module Dimensions	2278×1134×30mm
Weight	27.9kg
Glass	2.0 mm, Double AR Coated Heat Strengthened Glass
Frame	30mm Anodized Aluminium Alloy
J-Box	IP 68 (3 diodes)
Cables	4mm², 300mm each (Length can be customized in special case)

Maximum System Voltage (V)	1500(DC)
Operating Temperature (C)	-40~+85
Mechanical load(pa)	2400/5400
Maximum Series Fuse Rating (A)	25

Modules Per Pallet	36pcs
Modules Per Container(40HC)	720pcs

Technical drawing of a window frame showing front and back views with dimensions and section lines A-A and B-B.

Front View Dimensions:

- Overall width: 1134.0 ± 2.0
- Overall height: 2278.0 ± 2.0
- Top section height: 1400.0
- Bottom section height: 400.0
- Right side section height: 7.0
- Right side section height: 10.0
- Right side section height: 14.0
- Right side section height: 9.0
- Bottom section width: 8.0
- Bottom section width: 1091.0 ± 3.0
- Bottom section width: 55.0

Back View Dimensions:

- Overall width: 31.0
- Overall height: 30.0
- Top section height: 11.0
- Bottom section height: 22.0

Section Lines and Labels:

- Section line A-A 20:1 (Front View)
- Section line B-B 20:1 (Back View)
- Labels: Glass, IGU (Insulated Glass Unit), Back sheet, Frame, Silicon sealant.

Test temperature 25°C

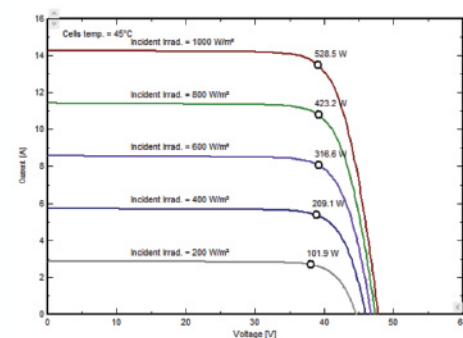


Figure 1 is a graph showing the current-voltage (I-V) characteristics of a solar cell under different temperatures and power conditions. The y-axis is Current [mA] (0 to 16) and the x-axis is Voltage [V] (0 to 60). Five curves are shown for temperatures 10°C, 25°C, 40°C, 55°C, and 70°C, each with a corresponding power (Pmp). The curves show a decrease in current as temperature increases, particularly at higher voltages. Open circles mark the maximum power point (MPP) for each curve.

Cells temp.	Pmp
10 °C	575.3 W
25 °C	556.2 W
40 °C	535.2 W
55 °C	515.3 W
70 °C	495.5 W

Incident irrad. = 1000 W/m²



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FOR MORE INFORMATION AND ENQUIRIES



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