

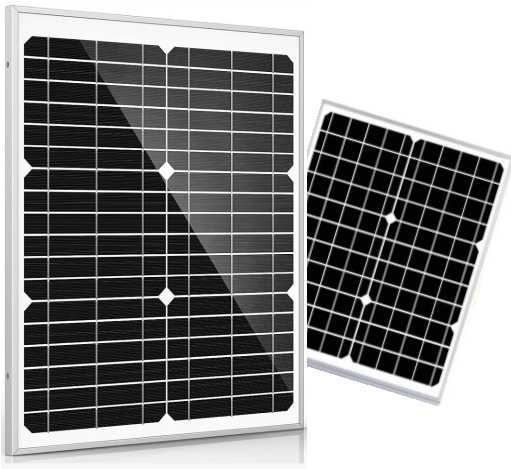
MassSolar

美日新能源

MS-05-40M

MONO-CRYSTALLINE MODULE

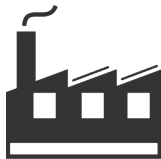
05/10/20/30/40WP



Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops



High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

High Power Up to 40W

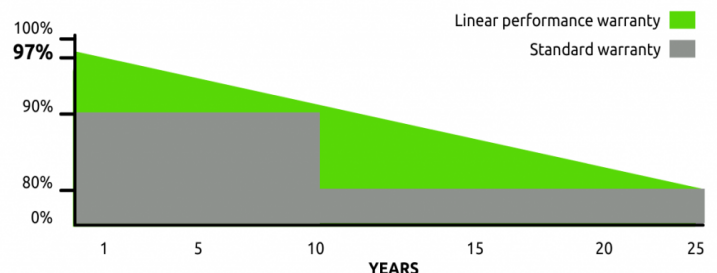
- Up to 40W front power and 16.9% module efficiency and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of and good reflection effect of MBB ensure high power

MAXIMUM EFFICIENCY

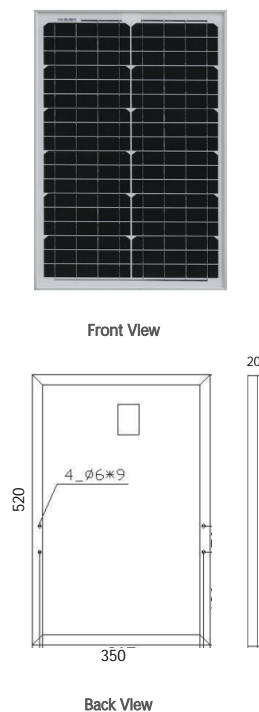
16.9%

POWER TOLERANCE

0~+3W



DIMENSION OF PV MODULE 20W (mm)

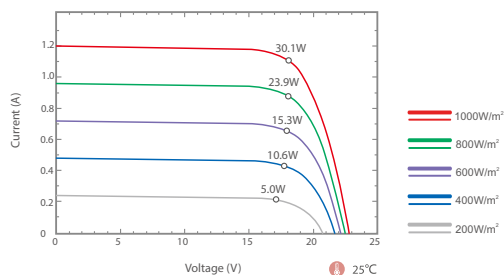


ELECTRICAL DATA (STC)

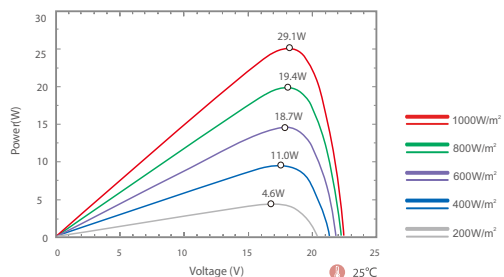
Maximum Power (Pmax)	5W	10W	20W
Maximum Power Voltage (Vmp)	17.8V	17.9V	18.0V
Maximum Power Current (Imp)	0.28A	0.55A	1.12A
Open Circuit Voltage (Voc)	21.6V	21.8V	22.9V
Short Circuit Current (Isc)	0.30A	0.61A	1.22A
Power Tolerance(Positive)	0-3%		
Module Efficiency	15.76%		
Operating Temperature Range	-40°C to +85°C		
Maximum System Voltage	1000V		
Series Fuse Rating	10A		
Temperature Coefficient of Pmax	-0.40 %/°C		
Temperature Coefficient of Voc	-0.30 %/°C		
Temperature Coefficient of Isc	0.05 %/°C		
Nominal Operating Cell Temperature	45±2°C		

Cell Type	Mono-Crystalline 156.75 mm		
Cell Orientation	36 cells (4x9)		36 cells (2x18)
Dimensions (mm)	240x190x17	350x260x20	410x350x20
Weight (Kg)	0.7Kg	1.3Kg	1.5Kg
Front Glass	3.2 mm, High Transmission, Low Iron, Tempered Glass		
Frame Type	Anodized Aluminium Alloy		
Junction Box Protection Class	IP 68 Rated		
Connector Type	MC4		
Cable	Photovoltaic Technology Cable 4.0mm ²		

I-V CURVES OF PV MODULE (30W)



P-V CURVES OF PV MODULE (30W)



ELECTRICAL DATA (STC)

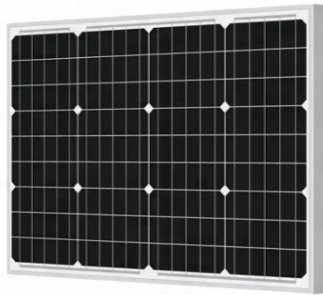
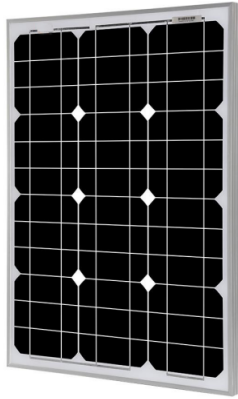
Maximum Power (Pmax)	30W	40W
Maximum Power Voltage (Vmp)	18.2V	18.4V
Maximum Power Current (Imp)	1.65A	2.17A
Open Circuit Voltage (Voc)	23.1V	23.3V
Short Circuit Current (Isc)	1.81A	2.38A
Power Tolerance(Positive)	0-3%	
Module Efficiency	15.85%	
Operating Temperature Range	-40°C to +85°C	
Maximum System Voltage	1000V	
Series Fuse Rating	10A	
Temperature Coefficient of Pmax	-0.40 %/°C	
Temperature Coefficient of Voc	-0.30 %/°C	
Temperature Coefficient of Isc	0.05 %/°C	
Nominal Operating Cell Temperature	45±2°C	

Cell Type	Mono-Crystalline 156.75 mm	
Cell Orientation	36 cells (4x9)	
Dimensions (mm)	650x350x20	670x450x20
Weight (Kg)	3.0Kg	3.5Kg
Front Glass	3.2 mm, High Transmission, Low Iron, Tempered Glass	
Frame Type	Anodized Aluminium Alloy	
Junction Box Protection Class	IP 68 Rated	
Connector Type	MC4	
Cable	Photovoltaic Technology Cable 4.0mm ²	

MS-50-90M

MONO-CRYSTALLINE MODULE

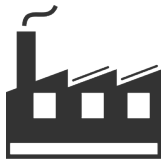
50/60/70/80/90WP



Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops



High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

High Power Up to 90W

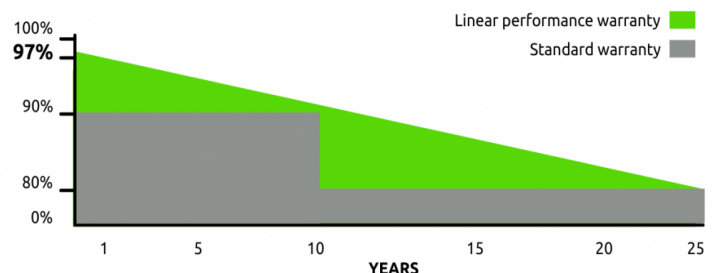
- Up to 90W front power and 16.9% module efficiency and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of and good reflection effect of MBB ensure high power

MAXIMUM EFFICIENCY

16.9%

POWER TOLERANCE

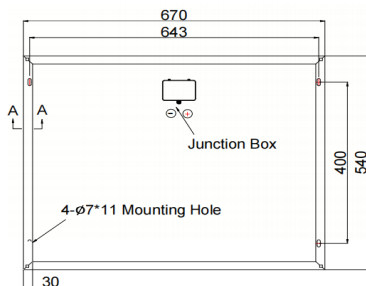
0~+3W



DIMENSION OF PV MODULE 50W (mm)

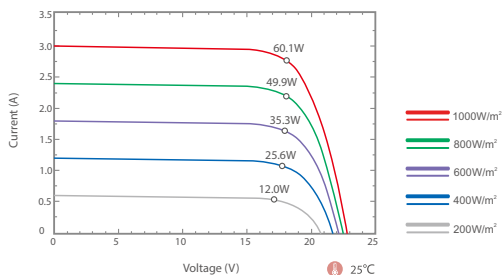


Front View

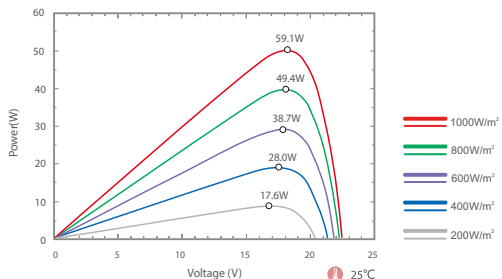


Back View

I-V CURVES OF PV MODULE (60W)



P-V CURVES OF PV MODULE (60W)



ELECTRICAL DATA (STC)

Maximum Power (Pmax)	50W	60W	70W
Maximum Power Voltage (Vmp)	17.8V	17.9V	18.0V
Maximum Power Current (Imp)	2.80A	3.35A	3.88A
Open Circuit Voltage (Voc)	21.6V	21.8V	22.9V
Short Circuit Current (Isc)	3.08A	3.65A	4.27A
Power Tolerance(Positive)	0-3%		
Module Efficiency	15.56%		
Operating Temperature Range	-40°C to +85°C		
Maximum System Voltage	1000V		
Series Fuse Rating	10A		
Temperature Coefficient of Pmax	-0.40 %/°C		
Temperature Coefficient of Voc	-0.30 %/°C		
Temperature Coefficient of Isc	0.05 %/°C		
Nominal Operating Cell Temperature	45±2°C		

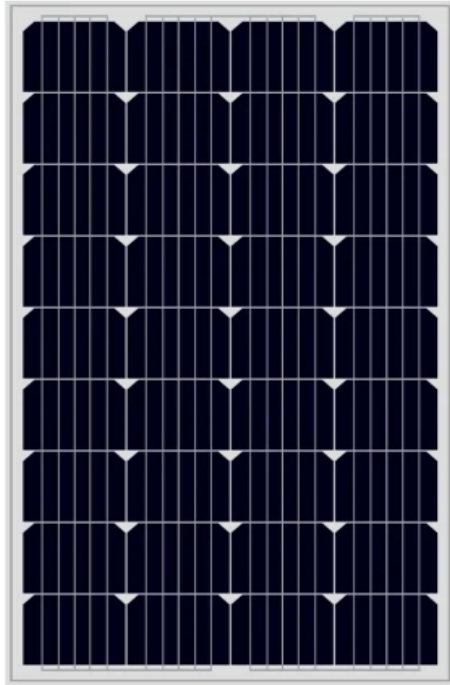
Cell Type	Mono-Crystalline 156.75 mm		
Cell Orientation	36 cells (4x9)		
Dimensions (mm)	670x540x30	670x650x30	770x670x30
Weight (Kg)	3.5Kg	4.5Kg	5.5Kg
Front Glass	3.2 mm, High Transmission, Low Iron, Tempered Glass		
Frame Type	Anodized Aluminium Alloy		
Junction Box Protection Class	IP 68 Rated		
Connector Type	MC4		
Cable	Photovoltaic Technology Cable 4.0mm²		

ELECTRICAL DATA (STC)

Maximum Power (Pmax)	80W	90W
Maximum Power Voltage (Vmp)	18.2V	18.4V
Maximum Power Current (Imp)	4.38A	4.89A
Open Circuit Voltage (Voc)	23.1V	23.3V
Short Circuit Current (Isc)	4.85A	5.38A
Power Tolerance(Positive)	0-3%	
Module Efficiency	15.85%	
Operating Temperature Range	-40°C to +85°C	
Maximum System Voltage	1000V	
Series Fuse Rating	10A	
Temperature Coefficient of Pmax	-0.40 %/°C	
Temperature Coefficient of Voc	-0.30 %/°C	
Temperature Coefficient of Isc	0.05 %/°C	
Nominal Operating Cell Temperature	45±2°C	

Cell Type	Mono-Crystalline 156.75 mm	
Cell Orientation	36 cells (4x9)	
Dimensions (mm)	770x670x30	1200x540x30
Weight (Kg)	5.5Kg	7.0Kg
Front Glass	3.2 mm, High Transmission, Low Iron, Tempered Glass	
Frame Type	Anodized Aluminium Alloy	
Junction Box Protection Class	IP 68 Rated	
Connector Type	MC4	
Cable	Photovoltaic Technology Cable 4.0mm²	

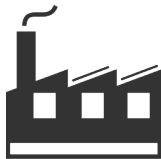
MS-100-140M
MONO-CRYSTALLINE MODULE
100/110/120/130/140WP



Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops



.High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

.High Energy Yield

- Excellent IAM(Incidet Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-rowshading conditions

.High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

.High Power Up to 140W

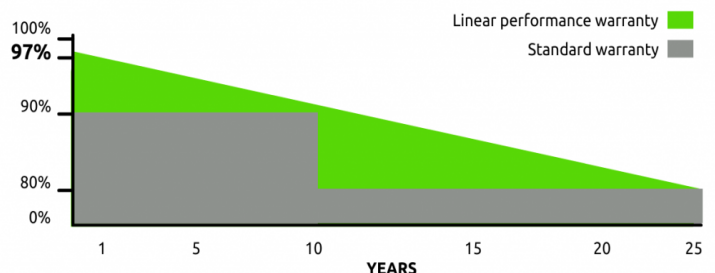
- Up to 140W front power and 17.5% module efficiency and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of and good reflection effect of MBB ensure high power

MAXIMUM EFFICIENCY

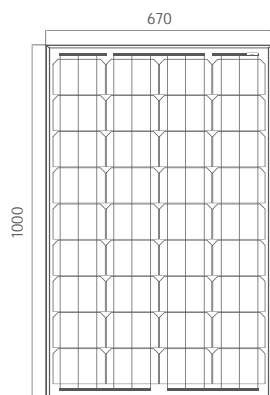
17.5%

POWER TOLERANCE

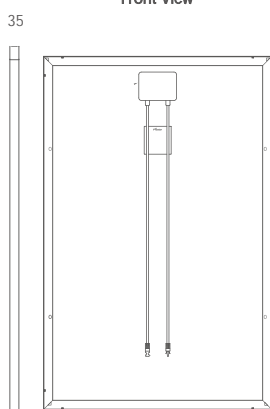
0~+5W



DIMENSION OF PV MODULE (mm)



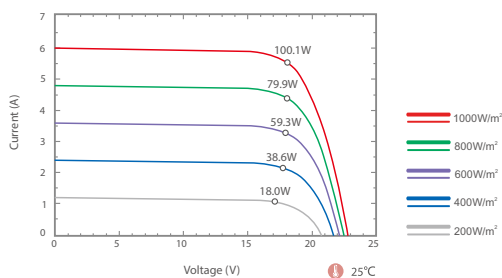
Front View



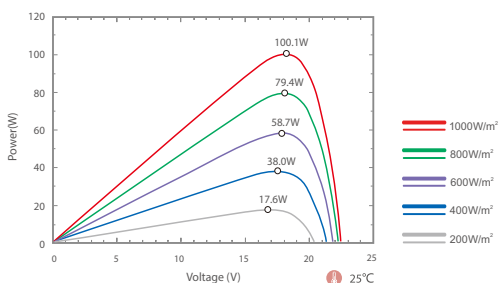
Back View

Side

I-V CURVES OF PV MODULE (100W)



P-V CURVES OF PV MODULE (100W)



ELECTRICAL DATA (STC)

Maximum Power (Pmax)	100W	110W	120W
Maximum Power Voltage (Vmp)	18.0V	18.2V	18.4V
Maximum Power Current (Imp)	5.56A	6.04A	6.52A
Open Circuit Voltage (Voc)	22.5V	22.7V	22.9V
Short Circuit Current (Isc)	6.00A	6.65A	7.15A
Power Tolerance(Positive)	0-3%		
Module Efficiency	16.96%		
Operating Temperature Range	-40°C to +85°C		
Maximum System Voltage	1000V		
Series Fuse Rating	10A		
Temperature Coefficient of Pmax	-0.40 %/°C		
Temperature Coefficient of Voc	-0.30 %/°C		
Temperature Coefficient of Isc	0.05 %/°C		
Nominal Operating Cell Temperature	45±2°C		

Cell Type	Mono-Crystalline 156.75 mm		
Cell Orientation	36 cells (4x9)		
Dimensions (mm)	1000x670x35	1100x670x35	1200x670x35
Weight (Kg)	6.5Kg	7.5Kg	8.5Kg
Front Glass	3.2 mm, High Transmission, Low Iron, Tempered Glass		
Frame Type	Anodized Aluminium Alloy		
Junction Box Protection Class	IP 68 Rated		
Connector Type	MC4		
Cable	Photovoltaic Technology Cable 4.0mm²		

ELECTRICAL DATA (STC)

Maximum Power (Pmax)	130W	140W
Maximum Power Voltage (Vmp)	18.6V	18.8V
Maximum Power Current (Imp)	6.98A	7.44A
Open Circuit Voltage (Voc)	23.1V	23.3V
Short Circuit Current (Isc)	7.68A	8.19A
Power Tolerance(Positive)	0-3%	
Module Efficiency	17.85%	
Operating Temperature Range	-40°C to +85°C	
Maximum System Voltage	1000V	
Series Fuse Rating	10A	
Temperature Coefficient of Pmax	-0.40 %/°C	
Temperature Coefficient of Voc	-0.30 %/°C	
Temperature Coefficient of Isc	0.05 %/°C	
Nominal Operating Cell Temperature	45±2°C	

Cell Type	Mono-Crystalline 156.75 mm	
Cell Orientation	36 cells (4x9)	
Dimensions (mm)	1250x670x35	1320x670x35
Weight (Kg)	9.0Kg	9.5Kg
Front Glass	3.2 mm, High Transmission, Low Iron, Tempered Glass	
Frame Type	Anodized Aluminium Alloy	
Junction Box Protection Class	IP 68 Rated	
Connector Type	MC4	
Cable	Photovoltaic Technology Cable 4.0mm²	

MS-150-180M

MONO-CRYSTALLINE MODULE

150/160/170/180WP



High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

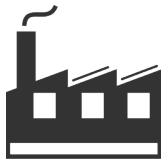
High Power Up to 180W

- Up to 180W front power and 17.8% module efficiency and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of and good reflection effect of MBB ensure high power

Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops

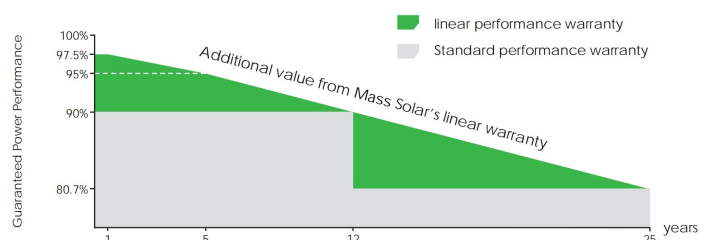


MAXIMUM EFFICIENCY

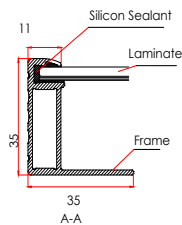
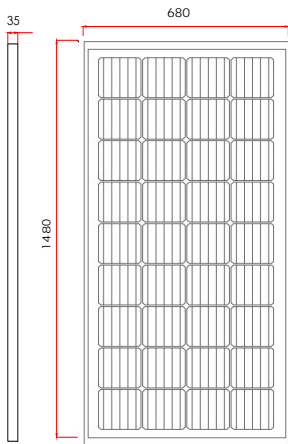
17.8%

POWER TOLERANCE

0~+5W

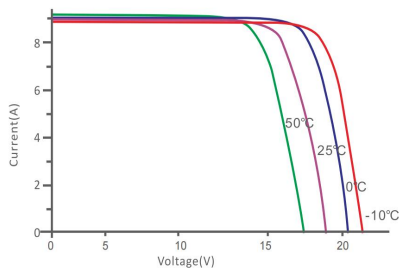


DIMENSIONS OF PV MODULE (mm)

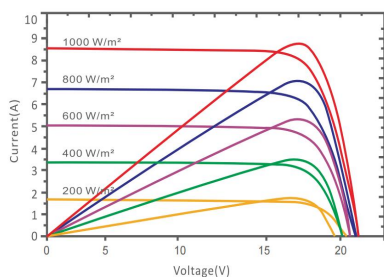


I-V CURVES OF PV MODULE (150W)

I-V characteristics at different temperature



P-V CURVES OF PV MODULE (150W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)	150	160	170	180
Power Output Tolerance- P_{MAX} (W)	0 ~ +5			
Maximum Power Voltage- V_{MPP} (V)	18.4	18.6	18.8	18.9
Maximum Power Current- I_{MPP} (A)	8.17	8.60	9.41	9.73
Open Circuit Voltage- V_{OC} (V)	22.1	22.6	22.8	23.1
Short Circuit Current- I_{SC} (A)	8.58	9.08	9.26	9.78
Module Efficiency (%)	15.6	15.9	16.2	16.5

STC: Irradiance 1000 W/m², Cell Temperature 25°C, Air Mass AM1.5.

*Test tolerance: ±3%.

ELECTRICAL DATA (NOCT)

Maximum Power- P_{MAX} (Wp)	112	120	128	136
Maximum Power Voltage- V_{MPP} (V)	17.2	17.4	17.6	17.8
Maximum Power Current- I_{MPP} (A)	6.51	6.61	6.79	6.97
Open Circuit Voltage- V_{OC} (V)	20.6	20.9	21.1	21.3
Short Circuit Current- I_{SC} (A)	7.12	7.23	7.35	7.41

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

MECHANICAL DATA

Solar Cells	Mono-crystalline 156.75 × 156.75 mm
Cell Orientation	36 cells (4 × 9)
Module Dimensions	1480 × 680 × 35 mm
Weight	11.5 kg
Glass	3.2 mm, High Transmission, AR Coated Tempered Glass
Backsheet	White OR Black
Frame	Anodized Aluminum Alloy
J-Box	IP 67 or IP 68 rated
Cable	Photovoltaic Technology Cable 4.0mm ²
Connector	MC4

TEMPERATURE RATINGS

Nominal Operating Cell Temperature (NOCT)	44°C (±2°C)
Temperature Coefficient of P_{MAX} Tem	- 0.41%/°C
Temperature Coefficient of V_{OC} Temperat	-0.32%/°C
Temperature Coefficient of I_{SC}	0.05%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1000V DC (IEC) 1000V DC (UL)
Max Series Fuse Rating	10A

WARRANTY

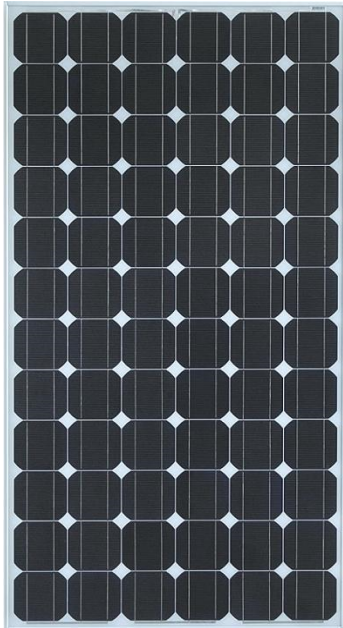
10 year Product Workmanship Warranty
25 year Linear Power Warranty

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 30 pcs
Modules per 40' container: 1680 pcs

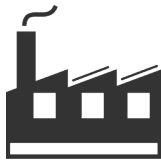
MS-190-210M
MONO-CRYSTALLINE MODULE
190/195/200/205/210WP



Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops



.High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

.High Energy Yield

- Excellent IAM(Incidet Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-rowshading conditions

.High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

.High Power Up to 210W

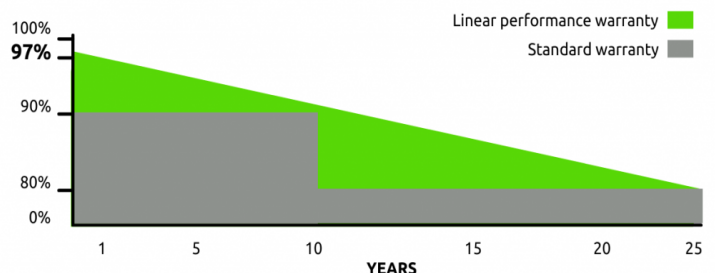
- Up to 210W front power and 18.85% module efficiency and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of and good reflection effect of MBB ensure high power

MAXIMUM EFFICIENCY

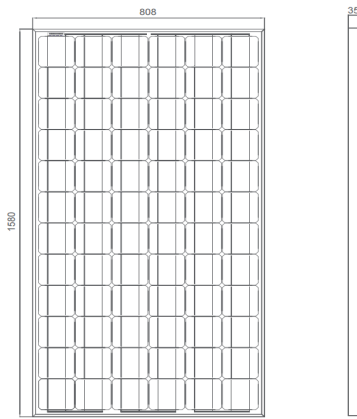
18.85%

POWER TOLERANCE

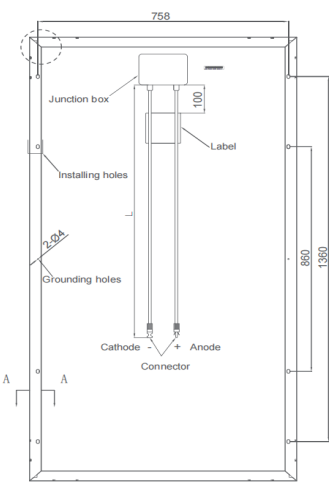
0~+5W



DIMENSION OF PV MODULE 200W (mm)

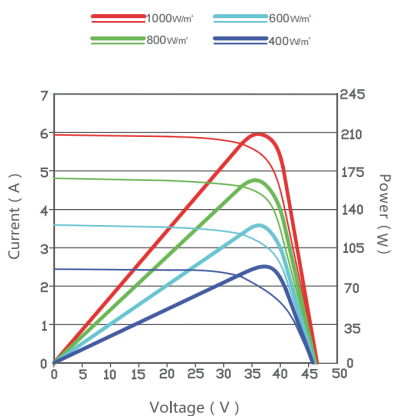


Front View



Back View

P-V CURVES OF PV MODULE (200W)



ELECTRICAL DATA (STC)

Maximum Power (Pmax)	190W	195W	200W
Maximum Power Voltage (Vmp)	36.6V	36.8V	36.9V
Maximum Power Current (Imp)	5.18A	5.30A	5.42A
Open Circuit Voltage (Voc)	45.2V	45.4V	45.6V
Short Circuit Current (Isc)	5.56A	5.67A	5.80A
Power Tolerance(Positive)	0-3%		
Module Efficiency	17.16%	17.56%	18.06%
Operating Temperature Range	-40°C to +85°C		
Maximum System Voltage	1000V		
Series Fuse Rating	10A		
Temperature Coefficient of Pmax	-0.40 %/°C		
Temperature Coefficient of Voc	-0.30 %/°C		
Temperature Coefficient of Isc	0.05 %/°C		
Nominal Operating Cell Temperature	45±2°C		

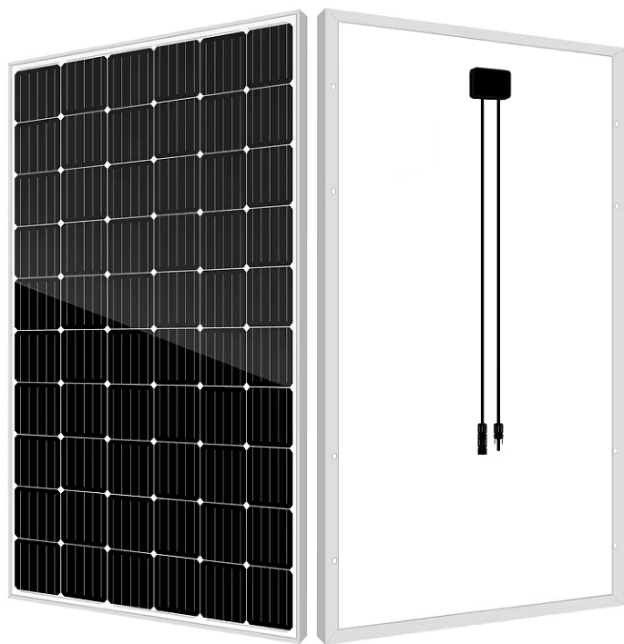
Cell Type	Mono-Crystalline 125 x 125 mm
Cell Orientation	72 cells (6x12)
Dimensions (mm)	1580x808x35
Weight (Kg)	14.5Kg
Front Glass	3.2 mm, High Transmission, Low Iron, Tempered Glass
Frame Type	Anodized Aluminium Alloy
Junction Box Protection Class	IP 68 Rated
Connector Type	MC4
Cable	Photovoltaic Technology Cable 4.0mm², 900mm Length

ELECTRICAL DATA (STC)

Maximum Power (Pmax)	205W	210W
Maximum Power Voltage (Vmp)	37.2V	37.4V
Maximum Power Current (Imp)	5.51A	5.61A
Open Circuit Voltage (Voc)	45.9V	46.1V
Short Circuit Current (Isc)	5.90A	6.01A
Power Tolerance(Positive)	0-3%	
Module Efficiency	18.45%	18.85%
Operating Temperature Range	-40°C to +85°C	
Maximum System Voltage	1000V	
Series Fuse Rating	10A	
Temperature Coefficient of Pmax	-0.40 %/°C	
Temperature Coefficient of Voc	-0.30 %/°C	
Temperature Coefficient of Isc	0.05 %/°C	
Nominal Operating Cell Temperature	45±2°C	

Cell Type	Mono-Crystalline 125 x 125 mm
Cell Orientation	72 cells (6x12)
Dimensions (mm)	1580x808x35
Weight (Kg)	14.5Kg
Front Glass	3.2 mm, High Transmission, Low Iron, Tempered Glass
Frame Type	Anodized Aluminium Alloy
Junction Box Protection Class	IP 68 Rated
Connector Type	MC4
Cable	Photovoltaic Technology Cable 4.0mm², 900mm Length

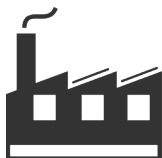
MS-260-280M MONO-CRYSTALLINE MODULE 260/265/270/275/280WP



Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops



High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

High Power Up to 280W

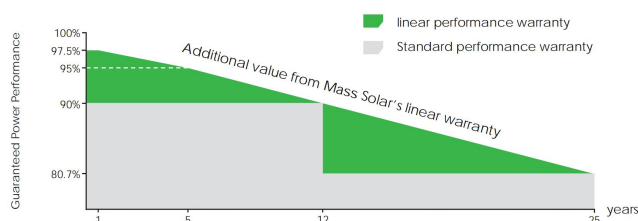
- Up to 280W front power and 17.8% module efficiency and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of and good reflection effect of MBB ensure high power

MAXIMUM EFFICIENCY

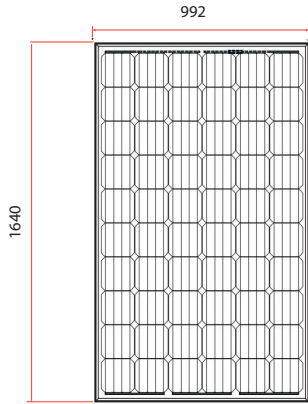
17.8%

POWER TOLERANCE

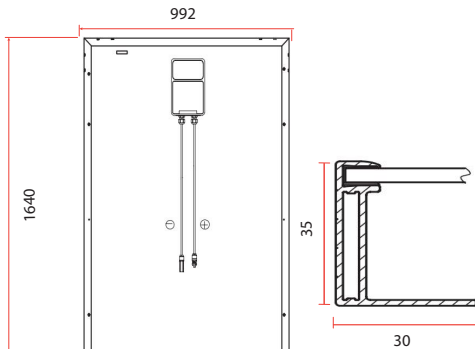
0~+5W



DIMENSIONS OF PV MODULE (mm)

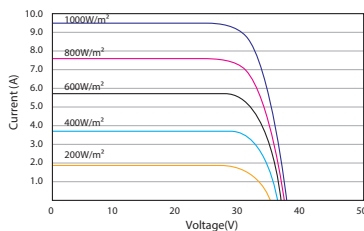


Front View

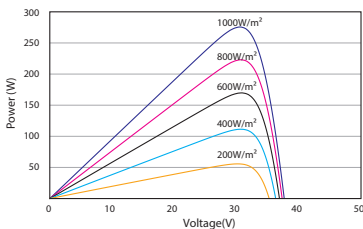


Back View

I-V CURVES OF PV MODULE (280W)



P-V CURVES OF PV MODULE (280W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)	260	265	270	275	280
Power Output Tolerance- P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage- V_{MPP} (V)	30.5	30.8	31.1	31.3	31.6
Maximum Power Current- I_{MPP} (A)	8.52	8.60	8.69	8.78	8.87
Open Circuit Voltage- V_{OC} (V)	37.6	37.6	37.6	37.7	37.7
Short Circuit Current- I_{SC} (A)	9.10	9.20	9.26	9.34	9.42
Module Efficiency (%)	15.8	16.1	16.4	16.7	17.0

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

ELECTRICAL DATA (NOCT)

Maximum Power- P_{MAX} (Wp)	193	197	201	204	208
Maximum Power Voltage- V_{MPP} (V)	28.0	28.2	28.3	28.5	28.7
Maximum Power Current- I_{MPP} (A)	6.89	6.98	7.11	7.19	7.25
Open Circuit Voltage- V_{OC} (V)	34.9	34.9	34.9	34.9	35.0
Short Circuit Current- I_{SC} (A)	7.35	7.43	7.49	7.55	7.62

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

MECHANICAL DATA

Solar Cells	Mono-crystalline 156.75 × 156.75 mm
Cell Orientation	60 cells (6 × 10)
Module Dimensions	1640 × 992 × 35 mm
Weight	21.5 kg
Glass	3.2 mm , High Transmission, AR Coated Heat Strengthened Glass
EVA	White
Frame	Anodized Aluminium Alloy
J-Box	IP 67 or IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm ²
Connector	MC4

TEMPERATURE RATINGS

NOCT(Nominal Operating Cell Temperature)	44°C (±2°C)
Temperature Coefficient of P_{MAX}	- 0.41%/°C
Temperature Coefficient of V_{oc}	- 0.32%/°C
Temperature Coefficient of I_{sc}	0.05%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
	1000V DC (UL)
Max Series Fuse Rating	15A

(DO NOT connect Fuse in Combiner Box with two or more strings in parallel connection)

WARRANTY

10 year Product Workmanship Warranty
30 year Linear Power Warranty

(Please refer to product warranty for details)

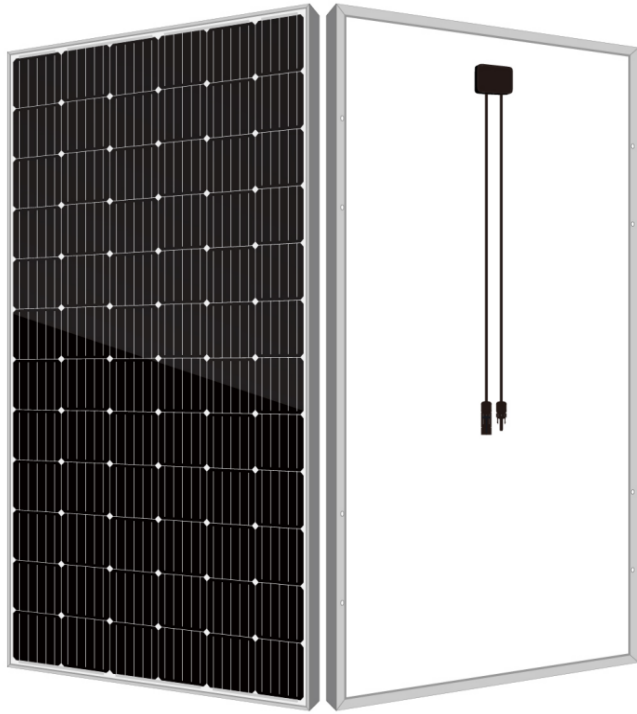
PACKAGING CONFIGURATION

Modules per box: 30 pcs
Modules per 40' container: 780 pcs

MS-320-340M

MONO-CRYSTALLINE MODULE

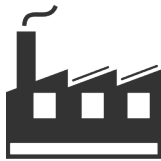
320/325/330/335/340WP



Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops



High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

High Power Up to 340W

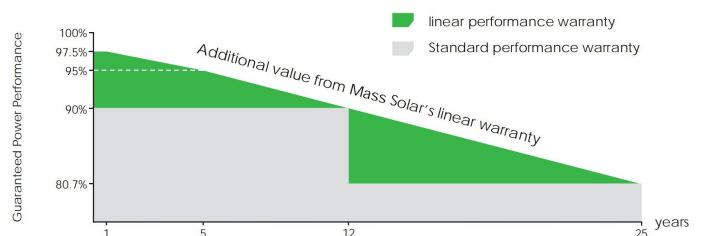
- Up to 340W front power and 18.5% module efficiency and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of and good reflection effect of MBB ensure high power

MAXIMUM EFFICIENCY

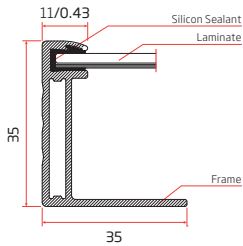
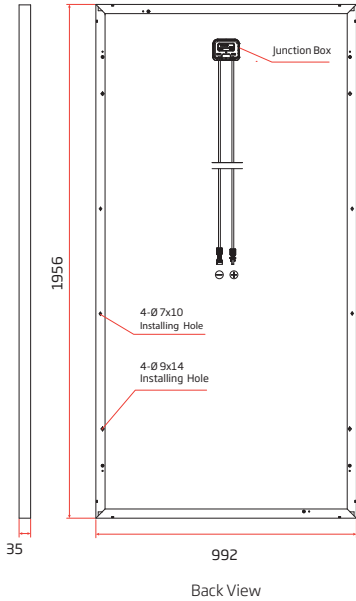
18.5%

POWER TOLERANCE

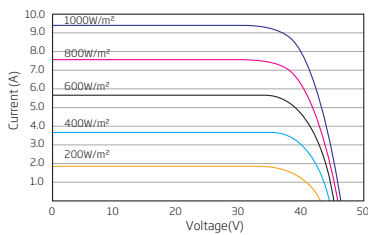
0~+5W



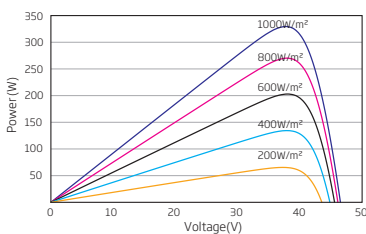
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE (335W)



P-V CURVES OF PV MODULE (335W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)	320	325	330	335	340
Power Output Tolerance- P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage- V_{MPP} (V)	37.1	37.2	37.4	37.6	37.8
Maximum Power Current- I_{MPP} (A)	8.63	8.73	8.83	8.91	8.99
Open Circuit Voltage- V_{OC} (V)	45.5	45.6	45.8	46.0	46.2
Short Circuit Current- I_{SC} (A)	9.15	9.19	9.28	9.35	9.42
Module Efficiency η (%)	16.5	16.7	17.0	17.2	17.5

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

ELECTRICAL DATA (NOCT)

Maximum Power- P_{MAX} (Wp)	237	241	245	249	252
Maximum Power Voltage- V_{MPP} (V)	34.3	34.4	34.6	34.8	35.0
Maximum Power Current- I_{MPP} (A)	6.92	7.00	7.08	7.14	7.21
Open Circuit Voltage- V_{OC} (V)	42.1	42.2	42.4	42.6	42.8
Short Circuit Current- I_{SC} (A)	7.39	7.42	7.49	7.55	7.60

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

MECHANICAL DATA

Solar Cells	Mono-crystalline 156.75 × 156.75 mm
Cell Orientation	72 cells (6 × 12)
Module Dimensions	1956 × 992 × 35 mm
Weight	22.5 kg
Glass	3.2 mm, High Transmission, AR Coated Tempered Glass
Backsheet	White
Frame	Silver Anodized Aluminium Alloy
J-Box	IP 67 or IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ²
Connector	MC4

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	44°C (±2°C)
Temperature Coefficient of P_{MAX}	-0.41%/°C
Temperature Coefficient of V_{OC}	-0.32%/°C
Temperature Coefficient of I_{SC}	0.05%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1000V DC (IEC) 1000V DC (UL)
Max Series Fuse Rating	15A

(DO NOT connect Fuse in Combiner Box with two or more strings in parallel connection)

WARRANTY

10 year Product Workmanship Warranty
25 year Linear Power Warranty

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 31 pcs
Modules per 40' container: 744pcs

MS-390-410HM
HALF MONO-CRYSTALLINE MODULE
390/395/400/405/410WP



.High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

.High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

.High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Class-C fire safety test passed

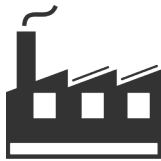
.High Power Up to 410W

- Up to 410W front power and 21.6% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of half-cut and good reflection effect of MBB ensure high power

Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops

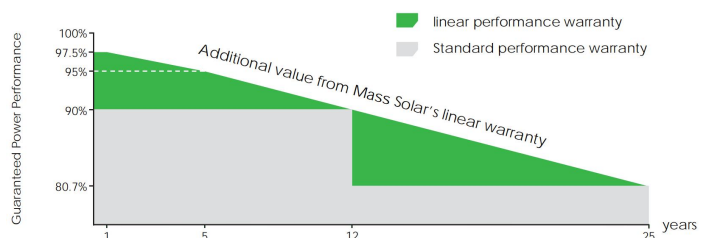


MAXIMUM EFFICIENCY

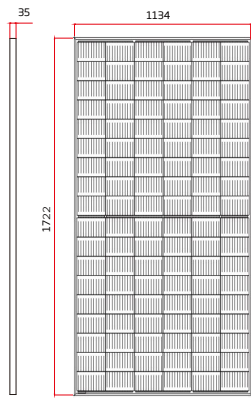
21.6%

POWER TOLERANCE

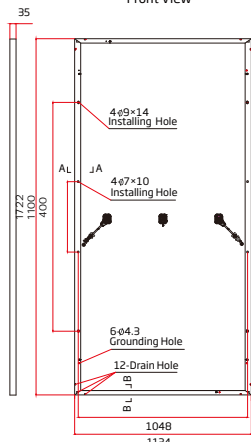
0~+5W



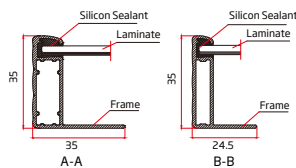
DIMENSIONS OF PV MODULE(mm)



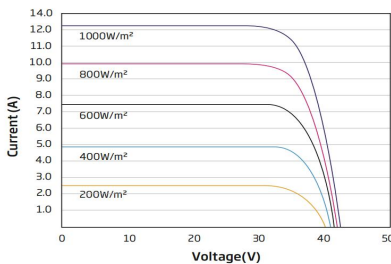
Front View



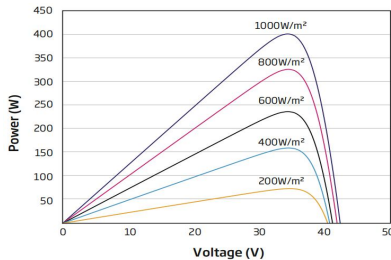
Back View



I-V CURVES OF PV MODULE (400W)



P-V CURVES OF PV MODULE (400W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)	390	395	400	405	410
Power Output Tolerance- P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage- V_{MPP} (V)	33.8	34.0	34.2	34.4	34.6
Maximum Power Current- I_{MPP} (A)	11.45	11.62	11.70	11.77	11.85
Open Circuit Voltage- V_{OC} (V)	40.8	41.0	41.2	41.4	41.6
Short Circuit Current- I_{SC} (A)	12.14	12.21	12.29	12.34	12.40
Module Efficiency η_m (%)	20.3	20.5	20.8	21.1	21.3

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

ELECTRICAL DATA (NMOT)

Maximum Power- P_{MAX} (Wp)	295	298	303	306	310
Maximum Power Voltage- V_{MPP} (V)	31.8	32.0	32.4	32.5	32.7
Maximum Power Current- I_{MPP} (A)	9.26	9.31	9.38	9.41	9.46
Open Circuit Voltage- V_{OC} (V)	38.4	38.6	38.8	38.9	39.1
Short Circuit Current- I_{SC} (A)	9.78	9.81	9.87	9.93	9.98

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

MECHANICAL DATA

Solar Cells	Monocrystalline 182 × 91 mm
Cell Orientation	108 cells (6 × 18)
Module Dimensions	1722×1134× 35 mm
Weight	21.0 kg
Glass	3.2 mm , High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA
Backsheet	White
Frame	35 mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² Portrait: N 280mm/P 280mm Landscape: N 1400 mm /P 1400 mm
Connector	MC4

TEMPERATURE RATINGS

NMOT (Nominal Module Operating Temperature)	43 C (±2 C)
Temperature Coefficient of P_{MAX}	- 0.34% / C
Temperature Coefficient of V_{OC}	- 0.26% / C
Temperature Coefficient of I_{SC}	0.04% / C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

MAXIMUM RATINGS

Operational Temperature	-40 ~ +85 C
Maximum System Voltage	1500V DC (IEC) 1500V DC (UL)
Max Series Fuse Rating	20A

WARRANTY

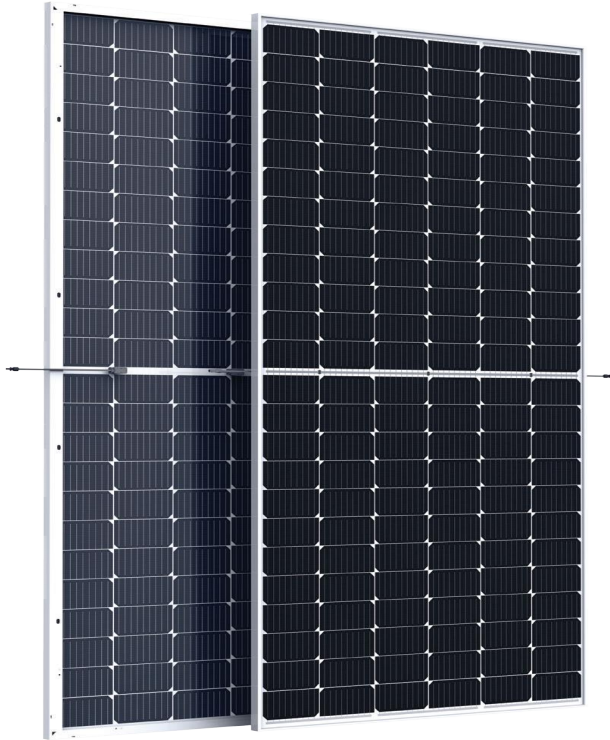
10 year Product Workmanship Warranty
25 year Power Warranty

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 36 pcs
Modules per 40' container: 936 pcs

MS-430-450BM
BIFACIAL MONO-CRYSTALLINE MODULE
430/435/440/445/450WP



High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Class-C fire safety test passed

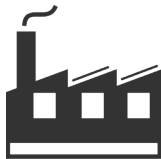
High Power Up to 450W

- Up to 450W front power and 20.7% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of half-cut and good reflection effect of MBB ensure high power

Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops

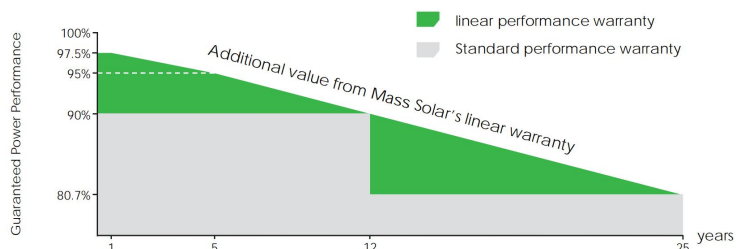


MAXIMUM EFFICIENCY

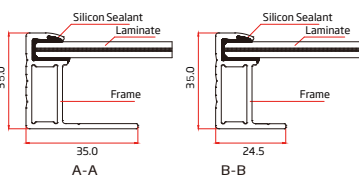
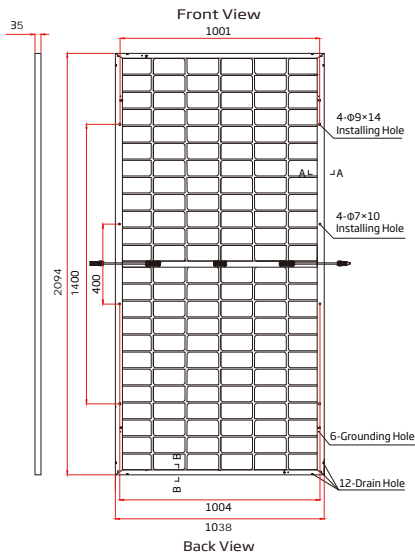
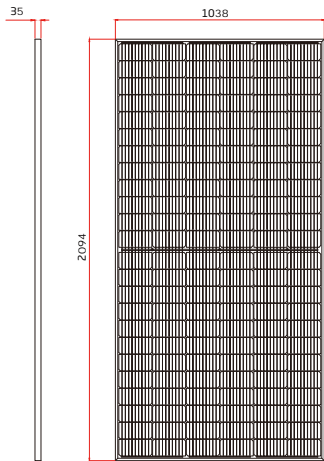
20.7%

POWER TOLERANCE

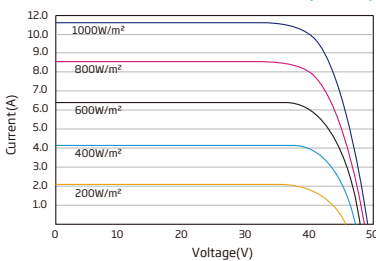
0~+5W



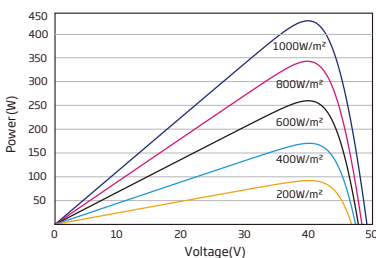
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE (440 W)



P-V CURVES OF PV MODULE (440W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)	430	435	440	445	450
Binning Tolerance- P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage- V_{MPP} (V)	40.5	40.8	41.1	41.4	41.7
Maximum Power Current- I_{MPP} (A)	10.62	10.67	10.71	10.75	10.80
Open Circuit Voltage- V_{OC} (V)	48.7	48.9	49.1	49.3	49.5
Short Circuit Current- I_{SC} (A)	11.20	11.24	11.28	11.32	11.36
Module Efficiency η_m (%)	19.5	19.7	19.9	20.2	20.4

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

Electrical characteristics with different rear side power gain (reference to 435 Wp front)

Maximum Power- P_{MAX} (Wp)	457	479	500	522	544
Maximum Power Voltage- V_{MPP} (V)	40.8	40.8	40.8	40.8	40.8
Maximum Power Current- I_{MPP} (A)	11.20	11.74	12.27	12.80	13.34
Open Circuit Voltage- V_{OC} (V)	49.0	49.1	49.2	49.3	49.4
Short Circuit Current- I_{SC} (A)	11.80	12.36	12.93	13.49	14.05
Pmax gain	5%	10%	15%	20%	25%

Power Bifaciality: 70±5%.

ELECTRICAL DATA (NMOT)

Maximum Power- P_{MAX} (Wp)	325	329	333	337	341
Maximum Power Voltage- V_{MPP} (V)	38.2	38.5	38.8	39.0	39.1
Maximum Power Current- I_{MPP} (A)	8.51	8.55	8.58	8.63	8.71
Open Circuit Voltage- V_{OC} (V)	46.0	46.2	46.4	46.6	46.7
Short Circuit Current- I_{SC} (A)	9.02	9.05	9.08	9.12	9.15

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

MECHANICAL DATA

Solar Cells	Monocrystalline 166×83 mm
Cell Orientation	144 cells (6 × 24)
Module Dimensions	2094×1038×35 mm
Weight	28.5 kg
Front Glass	2.0 mm , High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	2.0 mm , Heat Strengthened Glass (White Grid Glass)
Frame	35 mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² Portrait: 280/280 mm Landscape: 1900/1900 mm
Connector	MC4

TEMPERATURE RATINGS

NMOT (Nominal Module Operating Temperature)	41°C (±3°C)
Temperature Coefficient of P_{MAX}	- 0.35%/°C
Temperature Coefficient of V_{OC}	- 0.25%/°C
Temperature Coefficient of I_{SC}	0.04%/°C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	20A

WARRANTY

12 year Product Workmanship Warranty
30 year Power Warranty
2% first year degradation
0.45% Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 31 pcs
Modules per 40' container: 726 pcs

MS-430-450HM
HALF MONO-CRYSTALLINE MODULE
430/435/440/445/450WP



.High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

.High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

.High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Class-C fire safety test passed

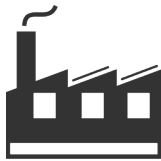
.High Power Up to 450W

- Up to 450W front power and 20.6% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of half-cut and good reflection effect of MBB ensure high power

Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops

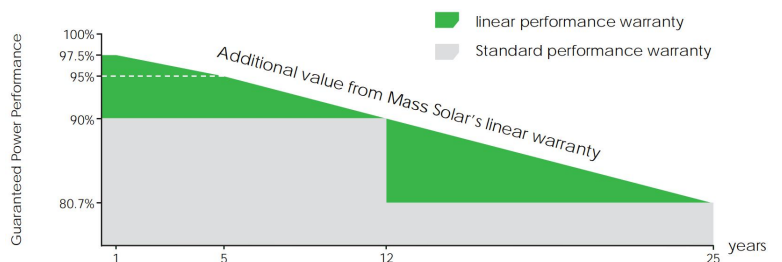


MAXIMUM EFFICIENCY

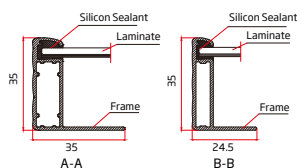
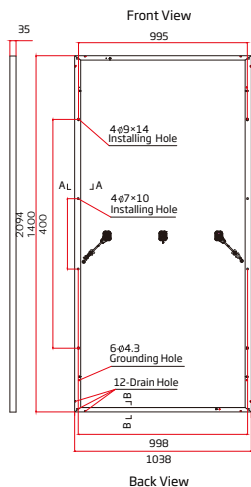
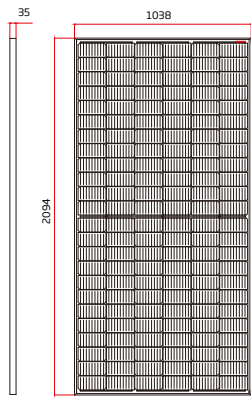
20.6%

POWER TOLERANCE

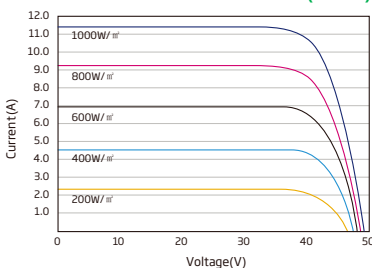
0~+5W



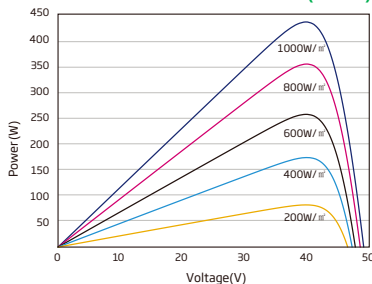
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE (440W)



P-V CURVES OF PV MODULE (440W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)	430	435	440	445	450
Power Output Tolerance- P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage- V_{MPP} (V)	40.3	40.5	40.7	40.8	41.0
Maximum Power Current- I_{MPP} (A)	10.67	10.74	10.82	10.90	10.98
Open Circuit Voltage- V_{OC} (V)	48.7	49.0	49.2	49.4	49.6
Short Circuit Current- I_{SC} (A)	11.22	11.31	11.39	11.46	11.53
Module Efficiency η_m (%)	19.7	19.9	20.1	20.4	20.6

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

ELECTRICAL DATA (NMOT)

Maximum Power- P_{MAX} (Wp)	325	329	333	336	340
Maximum Power Voltage- V_{MPP} (V)	38.0	38.2	38.4	38.5	38.7
Maximum Power Current- I_{MPP} (A)	8.56	8.61	8.68	8.73	8.80
Open Circuit Voltage- V_{OC} (V)	46.0	46.3	46.4	46.6	46.8
Short Circuit Current- I_{SC} (A)	9.03	9.11	9.17	9.23	9.28

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

MECHANICAL DATA

Solar Cells	Monocrystalline 166 × 83 mm
Cell Orientation	144 cells (6 × 24)
Module Dimensions	2094 × 1038 × 35 mm
Weight	24.0 kg
Glass	3.2 mm , High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA
Backsheet	White
Frame	35 mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² Portrait: N 280mm/P 280mm Landscape: N 1400 mm /P 1400 mm
Connector	MC4

TEMPERATURE RATINGS

NMOT (Nominal Module Operating Temperature)	41 C (±3 C)
Temperature Coefficient of P_{MAX}	- 0.36%/ C
Temperature Coefficient of V_{OC}	- 0.26%/ C
Temperature Coefficient of I_{SC}	0.04%/ C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

MAXIMUM RATINGS

Operational Temperature	-40 ~ +85 C
Maximum System Voltage	1500V DC (IEC) 1500V DC (UL)
Max Series Fuse Rating	20A

WARRANTY

10 year Product Workmanship Warranty
25 year Power Warranty

(Please refer to product warranty for details)

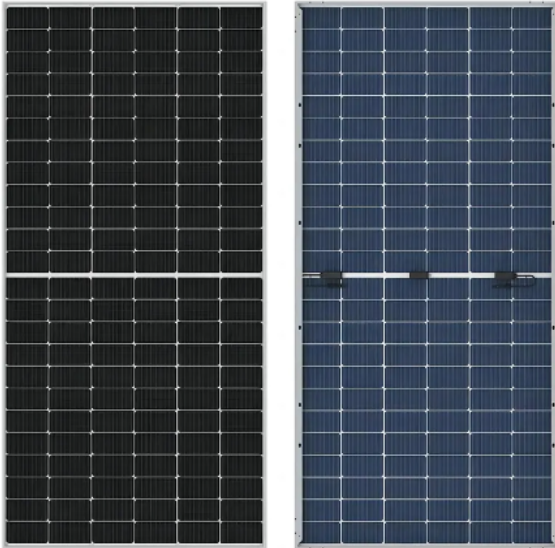
PACKAGING CONFIGURATION

Modules per box: 31 pcs
Modules per 40' container: 726 pcs

MS-530-550BM

BIFACIAL MONO-CRYSTALLINE MODULE

530/535/540/545/550WP



High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Class-C fire safety test passed

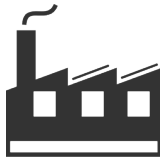
High Power Up to 550W

- Up to 550W front power and 22.5% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of half-cut and good reflection effect of MBB ensure high power

Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops

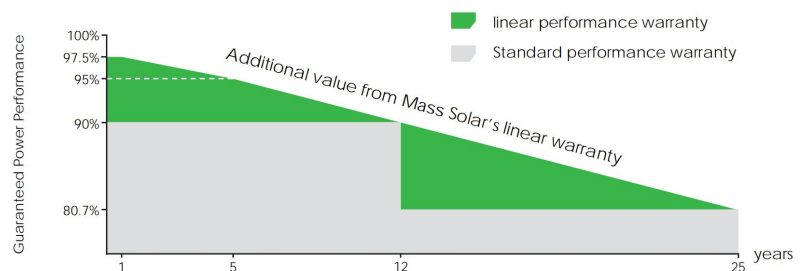


MAXIMUM EFFICIENCY

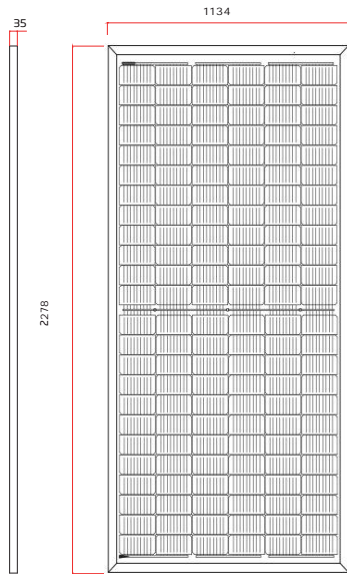
22.5%

POWER TOLERANCE

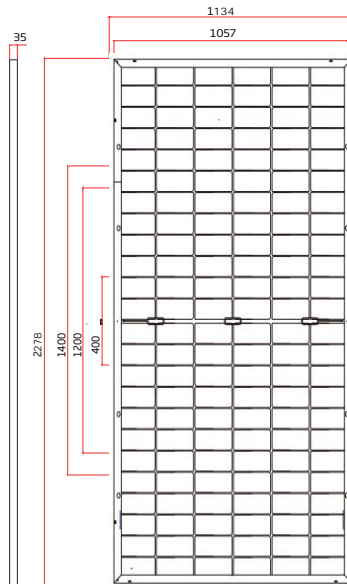
0~+5W



DIMENSIONS OF PV MODULE(mm)

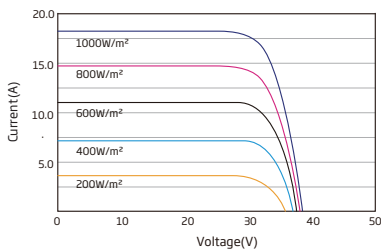


Front View

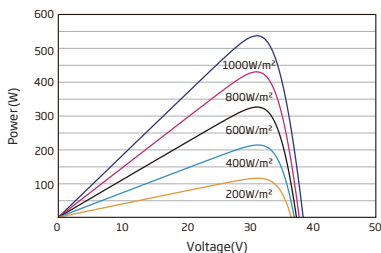


Back View

I-V CURVES OF PV MODULE(540 W)



P-V CURVES OF PV MODULE(540W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)	530	535	540	545	550
Power Tolerance- P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage- V_{MPP} (V)	31.0	31.2	31.4	31.6	31.8
Maximum Power Current- I_{MPP} (A)	17.11	17.16	17.21	17.24	17.29
Open Circuit Voltage- V_{OC} (V)	37.3	37.5	37.7	37.9	38.1
Short Circuit Current- I_{SC} (A)	18.19	18.24	18.30	18.35	18.39
Module Efficiency η_m (%)	20.3	20.5	20.7	20.9	21.0

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

Electrical characteristics with different power bin (reference to 10% Irradiance ratio)

Total Equivalent power - P_{MAX} (Wp)	567	573	578	583	589
Maximum Power Voltage- V_{MPP} (V)	31.0	31.2	31.4	31.6	31.8
Maximum Power Current- I_{MPP} (A)	18.31	18.36	18.41	18.45	18.50
Open Circuit Voltage- V_{OC} (V)	37.3	37.5	37.7	37.9	38.1
Short Circuit Current- I_{SC} (A)	19.46	19.52	19.58	19.63	19.68
Irradiance ratio (rear/front)	10%				

Power Bifaciality:70±5%.

ELECTRICAL DATA (NOCT)

Maximum Power- P_{MAX} (Wp)	401	405	409	413	416
Maximum Power Voltage- V_{MPP} (V)	28.8	29.0	29.2	29.4	29.5
Maximum Power Current- I_{MPP} (A)	13.93	13.97	14.02	14.08	14.10
Open Circuit Voltage- V_{OC} (V)	35.1	35.3	35.5	35.7	35.9
Short Circuit Current- I_{SC} (A)	14.66	14.70	14.75	14.79	14.82

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

MECHANICAL DATA

Solar Cells	Monocrystalline 182×91 mm
No. of cells	144 cells
Module Dimensions	2278×1134×35 mm
Weight	32.5 kg
Front Glass	2.0 mm , High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	2.0 mm , Heat Strengthened Glass (White Grid Glass)
Frame	35mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² Portrait: 280/280 mm Landscape: 2050/2050 mm
Connector	MC4

*Please refer to regional datasheet for specified connector.

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P_{MAX}	- 0.34%/°C
Temperature Coefficient of V_{OC}	- 0.25%/°C
Temperature Coefficient of I_{SC}	0.04%/°C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	35A

WARRANTY

12 year Product Workmanship Warranty
30 year Power Warranty
2% first year degradation
0.45% Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 30 pcs
Modules per 40' container:720 pcs

MS-530-55HM
BIFACIAL MONO-CRYSTALLINE MODULE
530/535/540/545/550WP



.High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

.High Energy Yield

- Excellent IAM(Incidet Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-rowshading conditions

.High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Class-C fire safety test passed

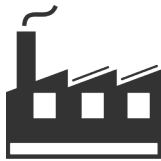
.High Power Up to 550W

- Up to 550W front power and 22.5% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of half-cut and good reflection effect of MBB ensure high power

Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops

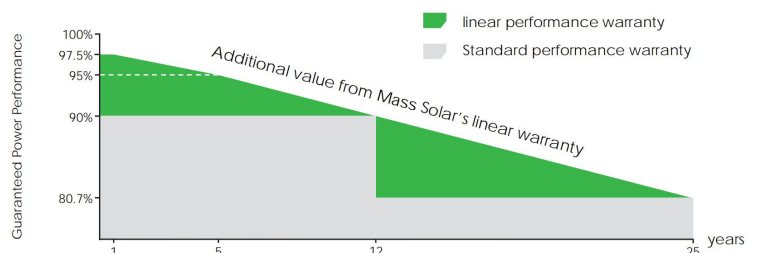


MAXIMUM EFFICIENCY

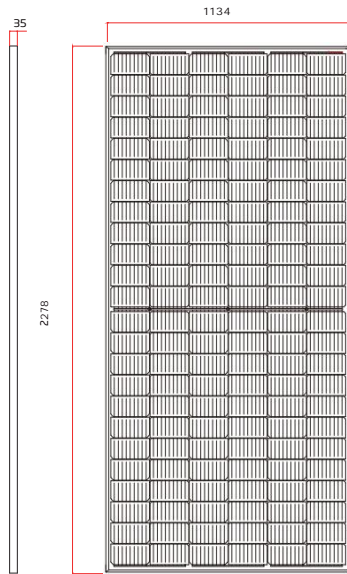
22.5%

POWER TOLERANCE

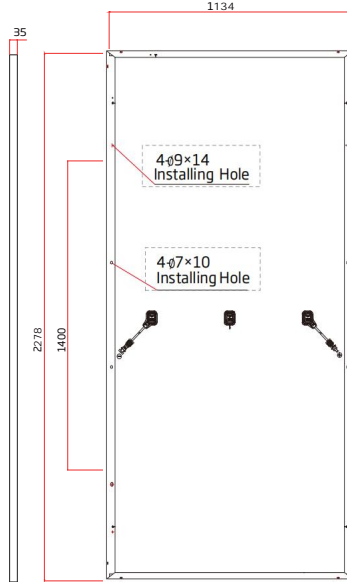
0~+5W



DIMENSIONS OF PV MODULE(mm)

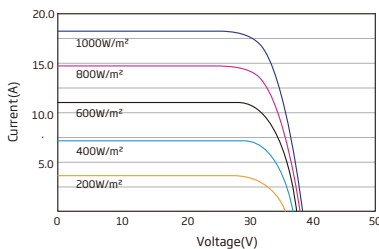


Front View

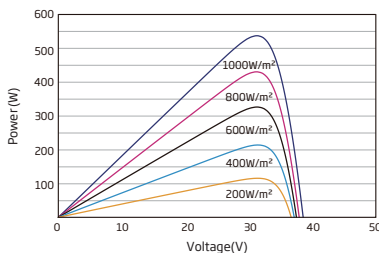


Back View

I-V CURVES OF PV MODULE (540 W)



P-V CURVES OF PV MODULE (540W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)	530	535	540	545	550
Power Tolerance- P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage- V_{MPP} (V)	31.0	31.2	31.4	31.6	31.8
Maximum Power Current- I_{MPP} (A)	17.11	17.16	17.21	17.24	17.29
Open Circuit Voltage- V_{OC} (V)	37.3	37.5	37.7	37.9	38.1
Short Circuit Current- I_{SC} (A)	18.19	18.24	18.30	18.35	18.39
Module Efficiency η_m (%)	20.3	20.5	20.7	20.9	21.0

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

Electrical characteristics with different power bin (reference to 10% Irradiance ratio)

Total Equivalent power - P_{MAX} (Wp)	567	573	578	583	589
Maximum Power Voltage- V_{MPP} (V)	31.0	31.2	31.4	31.6	31.8
Maximum Power Current- I_{MPP} (A)	18.31	18.36	18.41	18.45	18.50
Open Circuit Voltage- V_{OC} (V)	37.3	37.5	37.7	37.9	38.1
Short Circuit Current- I_{SC} (A)	19.46	19.52	19.58	19.63	19.68
Irradiance ratio (rear/front)	10%				

Power Bifaciality:70±5%.

ELECTRICAL DATA (NOCT)

Maximum Power- P_{MAX} (Wp)	401	405	409	413	416
Maximum Power Voltage- V_{MPP} (V)	28.8	29.0	29.2	29.4	29.5
Maximum Power Current- I_{MPP} (A)	13.93	13.97	14.02	14.08	14.10
Open Circuit Voltage- V_{OC} (V)	35.1	35.3	35.5	35.7	35.9
Short Circuit Current- I_{SC} (A)	14.66	14.70	14.75	14.79	14.82

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

MECHANICAL DATA

Solar Cells	Monocrystalline 182×91 mm
No. of cells	144 cells
Module Dimensions	2278×1134×35 mm
Weight	32.5 kg
Glass	3.2 mm , High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA
Backsheet	White
Frame	35mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² Portrait: 280/280 mm Landscape: 2050/2050 mm
Connector	MC4

*Please refer to regional datasheet for specified connector.

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P_{MAX}	- 0.34%/°C
Temperature Coefficient of V_{OC}	- 0.25%/°C
Temperature Coefficient of I_{SC}	0.04%/°C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	35A

WARRANTY

12 year Product Workmanship Warranty
30 year Power Warranty
2% first year degradation
0.45% Annual Power Attenuation

(Please refer to product warranty for details)

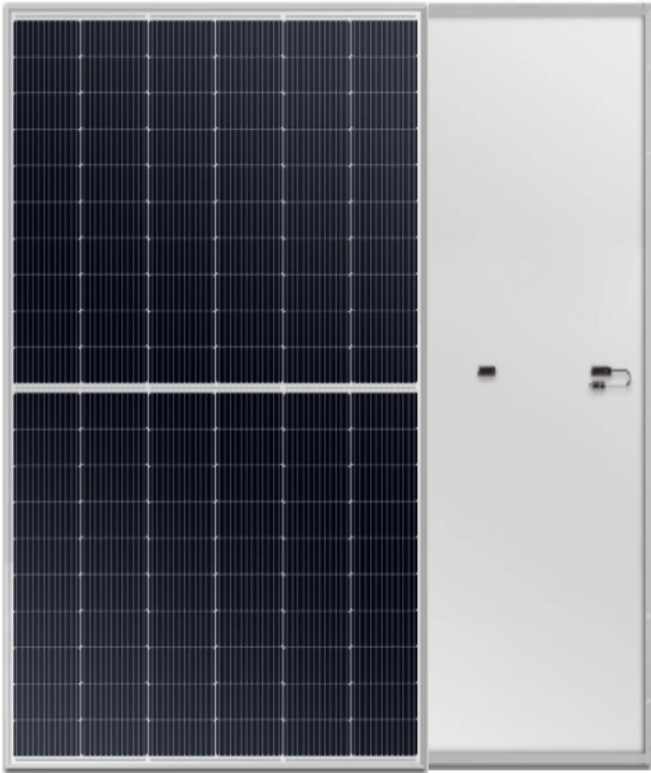
PACKAGING CONFIGURATION

Modules per box: 30 pcs
Modules per 40' container:720 pcs

MS-590-610HM

HALF MONO-CRYSTALLINE MODULE

590/595/600/605/610WP



High Customer Value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High Energy Yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions

High Reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Class-C fire safety test passed

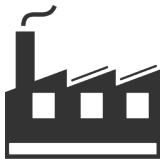
High Power Up to 610W

- Up to 610W front power and 22.5% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of half-cut and good reflection effect of MBB ensure high power

Applications >>



On-grid residential roof-tops



On-grid commercial/ industrial roof-tops

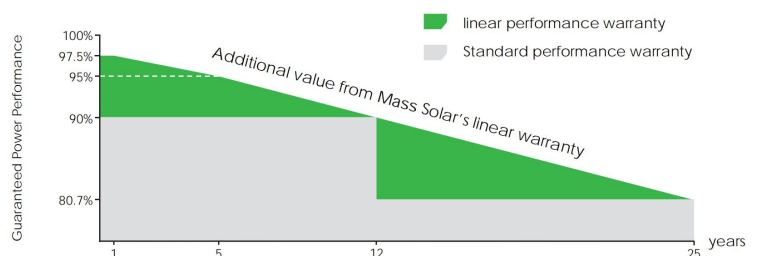


MAXIMUM EFFICIENCY

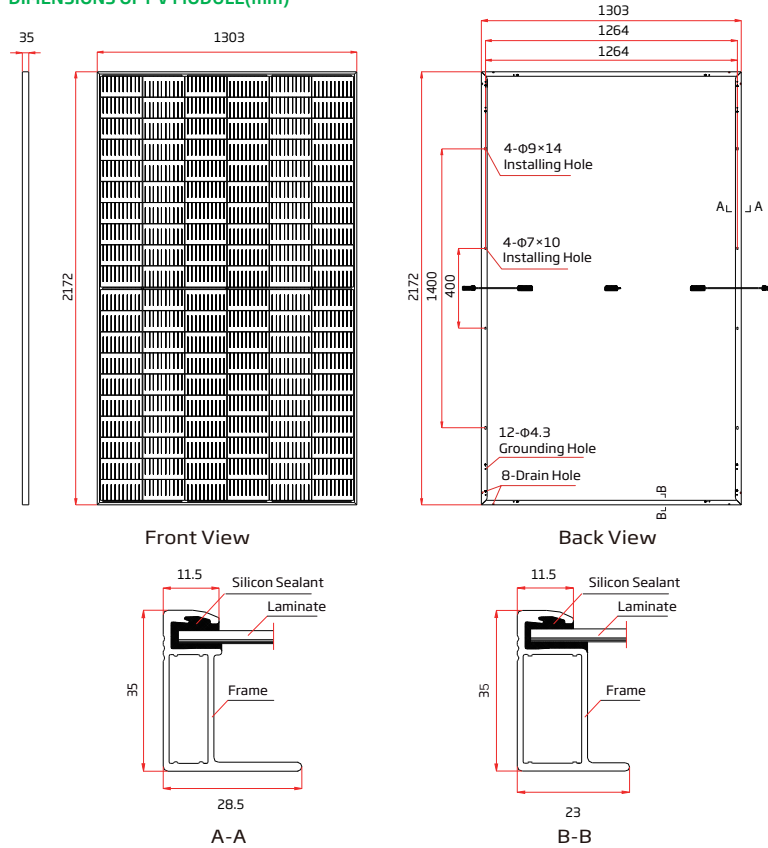
22.5%

POWER TOLERANCE

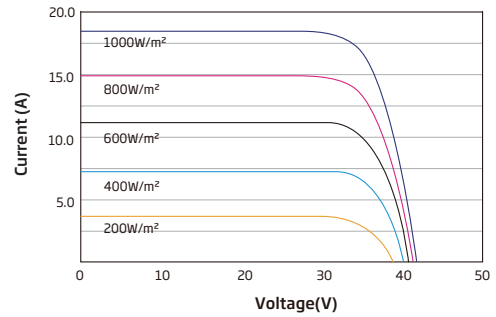
0~+5W



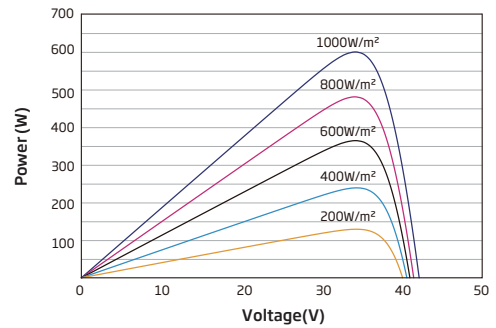
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(600 W)



P-V CURVES OF PV MODULE(600W)



ELECTRICAL DATA (STC)

Peak Power Watts-P _{MAX} (Wp)	590	595	600	605	610
Power Tolerance-P _{MAX} (W)	0 ~ +5				
Maximum Power Voltage-V _{MPP} (V)	34.0	34.2	34.4	34.6	34.8
Maximum Power Current-I _{MPP} (A)	17.35	17.40	17.44	17.49	17.53
Open Circuit Voltage-V _{OC} (V)	41.1	41.3	41.5	41.7	41.9
Short Circuit Current-I _{SC} (A)	18.42	18.47	18.52	18.57	18.62
Module Efficiency η _m (%)	20.8	21.0	21.2	21.4	21.6

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5. *Measuring tolerance: ±3%.

ELECTRICAL DATA (NOCT)

Maximum Power-P _{MAX} (Wp)	447	451	454	458	461
Maximum Power Voltage-V _{MPP} (V)	31.7	31.9	32.0	32.2	32.4
Maximum Power Current-I _{MPP} (A)	14.09	14.13	14.18	14.22	14.25
Open Circuit Voltage-V _{OC} (V)	38.7	38.9	39.1	39.3	39.5
Short Circuit Current-I _{SC} (A)	14.85	14.88	14.92	14.96	15.00

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

MECHANICAL DATA

Solar Cells	Monocrystalline 210×105 mm
No. of cells	120 cells (6×20)
Module Dimensions	2172×1303×35 mm
Weight	30.6 kg
Glass	3.2 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA/POE
Backsheet	White
Frame	35mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² Portrait: 350/280 mm Length can be customized
Connector	MC4

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P _{MAX}	-0.34%/°C
Temperature Coefficient of V _{OC}	-0.25%/°C
Temperature Coefficient of I _{SC}	0.04%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC) 1500V DC (UL)
Max Series Fuse Rating	30A

WARRANTY

12 year Product Workmanship Warranty
25 year Power Warranty
2% first year degradation
0.55% Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box:	33 pieces
Modules per 40' container:	594 pieces