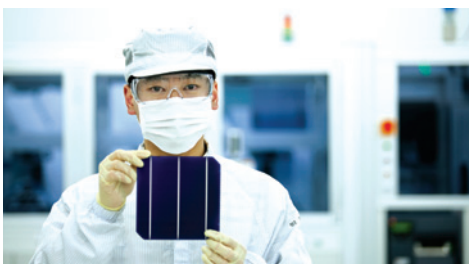


**Shinsung Solar Energy** has started PV business, the key field of renewable energy since 2007, and it has 420MW solar cell annual capacity at Jeungpyeong and 200MW solar module annual capacity at Eumseong. Shinsung achieved 20.03% conversion efficiency rate for solar cell, and 19.7% efficiency rate in mass production in 2012. Currently, Shinsung is producing above 19% efficiency solar cells with pure Korean technology and successfully established 'solar cell → module → installation' model, improving its own competitiveness in the global solar market. Under the objectives of preserving the environment and helping the advancement of solar energy business, Shinsung Solar Energy will continue to put our best efforts on research and development.



### History

- | 1977   | 1991  | 1998  | 2005  | 2007  | 2008  | 2009   | 2010  | 2011  | 2012   | 2013   | 2014   |
|--|---|---|---|---|---|--|---|---|--|--|--|
| <ul style="list-style-type: none"> <li>Establishment of Shinsung Industry</li> </ul> | <ul style="list-style-type: none"> <li>Awarded with Iron Tower Order of Industrial Service Merit</li> </ul> | <ul style="list-style-type: none"> <li>Received 10 Million Dollars Exporting Award</li> </ul> | <ul style="list-style-type: none"> <li>Awarded with Gold Tower Order of Industrial Service Merit</li> </ul> | <ul style="list-style-type: none"> <li>Launching solar cell business</li> </ul> | <ul style="list-style-type: none"> <li>Split of Shinsung into three independent companies - Shinsung Holdings, Shinsung ENG and Shinsung FA.</li> <li>Change listing and resume listing on the stock market.</li> </ul> | <ul style="list-style-type: none"> <li>Opened Solar Energy Promotion Center</li> <li>Achieved ISO 9001, ISO 14001, IEC 61215, IEC 61730</li> </ul> | <ul style="list-style-type: none"> <li>Developed the world's first 19.6% in solar energy conversion efficiency of solar cell</li> <li>Received 30 Million Dollars Exporting Award</li> <li>Received Prime Minister Commendation</li> <li>Received the President Commendation in Outstanding Job Creating Company</li> </ul> | <ul style="list-style-type: none"> <li>Changed the company name to Shinsung Solar Energy</li> <li>Expansion of solar cell line (total 350MW)</li> <li>Entered module industry (total 150MW)</li> <li>Established 'solar cell → module → installation' system</li> <li>Received the top Korean certification in 250W, 255W and 260W module efficiency</li> </ul> | <ul style="list-style-type: none"> <li>Developed 20.03% conversion efficiency of solar cell</li> </ul> | <ul style="list-style-type: none"> <li>Registered Program-CDM Business with the UN</li> <li>Received 0% in efficiency reduction ratio of PID test</li> </ul> | <ul style="list-style-type: none"> <li>Improvement of production efficiency by improving production lines (Solar cells : 420MW / Modules : 200MW)</li> </ul> |

# shinsung

## SOLAR ENERGY



### Possession of Research Center's own line for research

To perform continuous R&D, Shinsung established a 3MW line only for its research center to focus on high efficiency product research and development. The "research line" is capable of performing mass production test and product development at the same time allowing the newest technologies to be applied immediately.

### Achievement of 20.03% conversion efficiency rate

Through the continuous efforts focused on R&D, Shinsung successfully achieved conversion efficiency rate of 20.03% in 2012. In addition to the achievement, Shinsung added solar cell production line with Korean technology now fulfilling a mass production efficiency of 19%. The high efficiency achieved through optimized processing is the pride and competitiveness of Shinsung Solar Energy.

### One-stop 'solar cell → module → installation' service

With its high efficiency rate, high quality and high output for solar cells and modules, Shinsung Solar Energy performs the perfect installation satisfying the various style and demand of customers. The one-stop service which Shinsung offers will provide customers with high satisfaction and joy with its affordable cost and high quality.

### High-efficiency, high-quality, high-power, high-yield solar system

Shinsung Solar Energy, with its advanced technology, have received confirmation of 0% in efficiency reduction ratio of light induced degradation(LID) and 0.4% in potential induced degradation(PID) regarding solar modules, from a research conducted by Fraunhofer Institute in Germany.

### Domestic / International Certification

Green Certified Brand by KOTRA, ISO 9001, ISO 14001, OHSAS 18001, IEC 61215, IEC 61730, etc.



New & Renewable Energy



UL / CUL  
(U.S.A / Canada)



JET



TUV-SUD



CE  
(Communaute Europeen)



Seal of  
Kotra Global Brand



CERTIFICATE OF  
INSURANCE  
CHUBB (Korea)



Shinsung Solar Energy \_ #8, Daewangpangyo-ro 395, Seongnam-si bundang-gu, Gyeonggi-do, Korea (Zip code : 463-420)

• Korean. +82-31-788-9394

• English. +82-31-788-9426

• Japanese. +81-3-3539-6080

FAX: +82-31-788-9584

www.shinsung.co.kr

solar@shinsung.co.kr



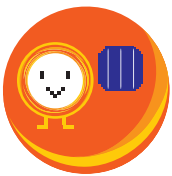


# SS-BM SERIES

Mono Crystalline Solar Panels 260-270 W /  
60 Cells / 3 Bus Bar

## High Efficiency, High Performance, Customer Satisfaction

Shinsung Solar Energy satisfies various needs of the customers based on the production of the world's best high efficiency solar modules and by pursuing a product specialization strategy. The company has the most diverse product lines in the industry, and plans to focus on the development of diverse and highly specialized products.



High quality,  
high power  
Cell efficiency above  
19%  
Module efficiency of  
16.55%



Guarantee products  
for 10 years  
Guarantee efficiency  
for 25 years



-40~+85°C in any  
environment to  
ensure  
high power output



Received 0%  
in efficiency  
reduction ratio  
of the test



Passed the  
mechanical load  
test of  
550kgf/m<sup>2</sup>(5400Pa)  
according to IEC  
61215



Product liability  
insurance  
Financial injury  
insurance

  
**shinsung**  
SOLAR ENERGY



# SS-BM SERIES

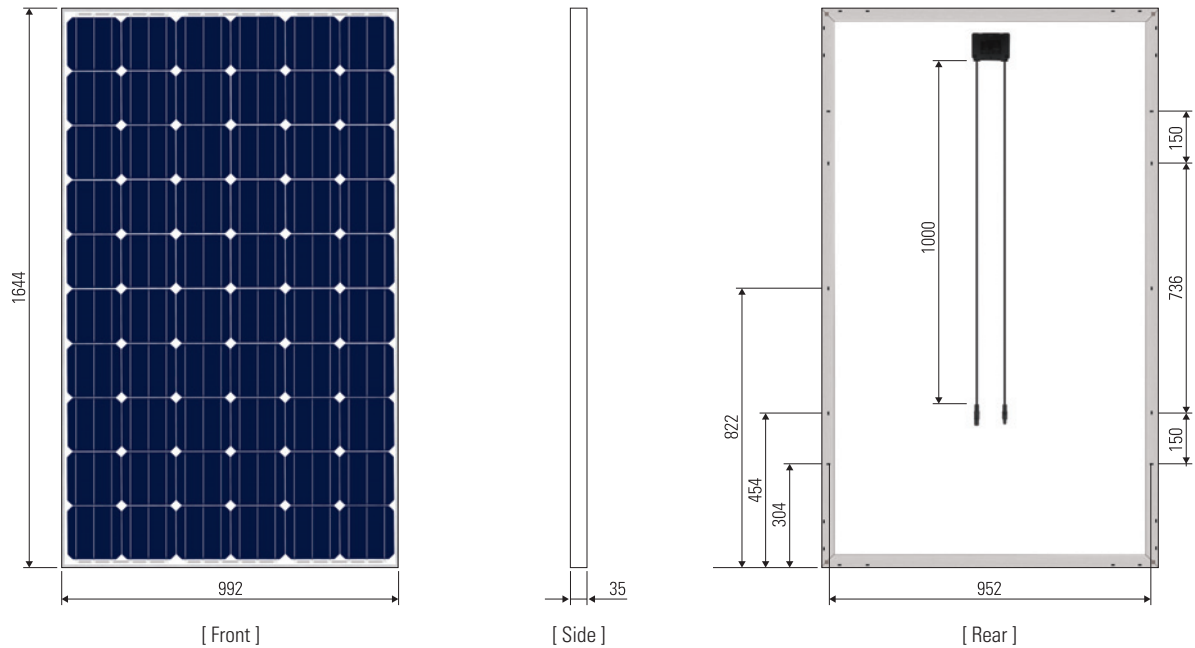
## Mono Crystalline Solar Panels 260-270 W / 60 Cells / 3 Bus Bar

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### Dimension

[ unit : mm ]

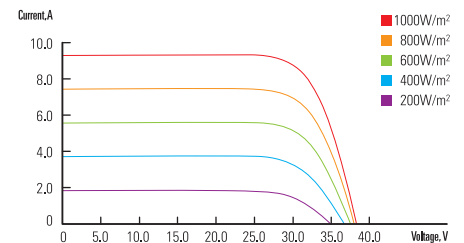


Item	SS-BM260	SS-BM265	SS-BM270
Peak Power(Wp)	260	265	270
Open Circuit Voltage(V)	38.0	38.1	38.2
Short Circuit Current(A)	9.01	9.16	9.29
Voltage at Pmax(V)	30.2	30.3	30.4
Current at Pmax(A)	8.61	8.75	8.89
Efficiency(%)	15.94	16.24	16.55
Dimension(mm)	992 x 1,644 x 35		
Weight(Kg)	18		

※ All data is tested under STC(Standard Test Conditions). Above data may be changed without prior notice.

• Peak power tolerance 0~+3.0% • Please inquire of us about correct data by each Certificate Holder.

### I-V Curve



### Safety Ratings & Warranties

Fire Safety Classification	Class "C"
Salt-mist Corrosion Test	Tested
Visible Light Reflected	4.20%~4.30% For more information, please contact us.
Warranty	10 Years limited Product Warranty 10 Years limited Power Warranty : 90% 25 Years limited Power Warranty : 80%
Certifications	UL 1703, CEC, IEC 61215 Safety Tested IEC 61730

### Mechanical Characteristics

Solar Cells	60 Cells (156x156mm)
Front Glass	Low Iron Tempered Glass
Junction Box	IP 67, 3 Bypass Diode
Output Cable	4mm <sup>2</sup> Cable, MC 4 (Compatible) Type
Frame	AL Alloy Type (Anodized)

### Loading Quantity (unit : pcs)

	60 Cells	72 Cells
<b>Domestic</b>		
2.5-ton	90	50
5-ton	210	150
5-ton+	240	175
11-ton	300	225
<b>Export</b>		
20ft	276	230
40ft	756(Dry) 812(H/Q)	624(Dry) 672(H/Q)

### Temperature Coefficient (Cell)

NOCT	46.7(°C)
$\alpha \Delta$ ISC	0.07(%/K)
$\beta \Delta$ VOC	-0.36(%/K)
$\gamma \Delta$ Pmax	-0.38(%/K)

### Tested Operation Conditions

Max Load	550kgf/m <sup>2</sup> (5400Pa)
Impact Resistance	25mm, 23m/s
Operating Temperature	-40 ~ +85°C



- www.shinsung.co.kr
- solar@shinsung.co.kr
- Fax. +82-31-788-9584
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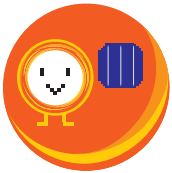


# SS-DM SERIES

Mono Crystalline Solar Panels 310-325 W /  
72 Cells / 3 Bus Bar

## High Efficiency, High Performance, Customer Satisfaction

Shinsung Solar Energy satisfies various needs of the customers based on the production of the world's best high efficiency solar modules and by pursuing a product specialization strategy. The company has the most diverse product lines in the industry, and plans to focus on the development of diverse and highly specialized products.



High quality,  
high power  
Cell efficiency above  
19%  
Module efficiency of  
17.02%



Guarantee products  
for 10 years  
Guarantee efficiency  
for 25 years



-40~+85°C in any  
environment to  
ensure  
high power output



Received 0%  
in efficiency  
reduction ratio  
of the test



Passed the  
mechanical load  
test of  
550kgf/m<sup>2</sup>(5400Pa)  
according to IEC  
61215



Product liability  
insurance  
Financial injury  
insurance

  
**shinsung**  
SOLAR ENERGY



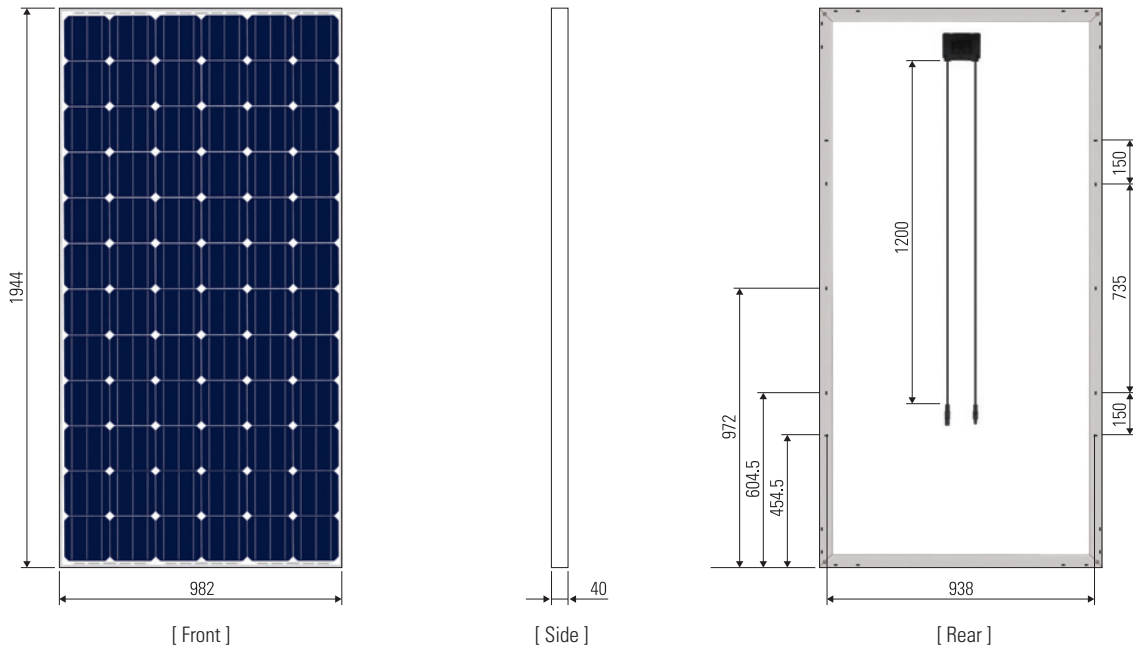
# SS-DM SERIES

## Mono Crystalline Solar Panels 310-325 W / 72 Cells / 3 Bus Bar

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### Dimension

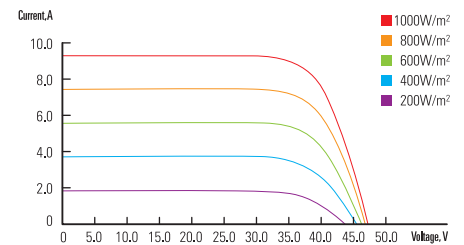
[ unit : mm ]



Item	SS-DM310	SS-DM315	SS-DM320	SS-DM325
Peak Power(Wp)	310	315	320	325
Open Circuit Voltage(V)	45.7	45.8	45.9	46.0
Short Circuit Current(A)	8.92	9.05	9.17	9.29
Voltage at Pmax(V)	36.6	36.7	36.8	36.9
Current at Pmax(A)	8.47	8.59	8.70	8.81
Efficiency(%)	16.23	16.50	16.76	17.02
Dimension(mm)	982 x 1,944 x 40			
Weight(Kg)	22			

※ All data is tested under STC(Standard Test Conditions). Above data may be changed without prior notice.  
• Peak power tolerance 0~+3.0% • Please inquire of us about correct data by each Certificate Holder.

### I-V Curve



### Safety Ratings & Warranties

Fire Safety Classification	Class "C"
Salt-mist Corrosion Test	Tested
Visible Light Reflected	4.20%~4.30% For more information, please contact us.
Warranty	10 Years limited Product Warranty 10 Years limited Power Warranty : 90% 25 Years limited Power Warranty : 80%
Certifications	UL 1703, CEC, IEC 61215 Safety Tested IEC 61730

### Mechanical Characteristics

Solar Cells	72 Cells (156x156mm)
Front Glass	Low Iron Tempered Glass
Junction Box	IP 67, 3 Bypass Diode
Output Cable	4mm <sup>2</sup> Cable, MC 4 (Compatible) Type
Frame	AL Alloy Type (Anodized)

### Loading Quantity (unit : pcs)

	60 Cells	72 Cells
<b>Domestic</b>		
2.5-ton	90	50
5-ton	210	150
5-ton+	240	175
11-ton	300	225
<b>Export</b>		
20ft	276	230
40ft	756(Dry) 812(H/Q)	624(Dry) 672(H/Q)

### Temperature Coefficient (Cell)

NOCT	45.4(°C)
$\alpha \Delta$ ISC	0.07(%/K)
$\beta \Delta$ VOC	-0.36(%/K)
$\gamma \Delta$ Pmax	-0.38(%/K)

### Tested Operation Conditions

Max Load	550kgf/m <sup>2</sup> (5400Pa)
Impact Resistance	25mm, 23m/s
Operating Temperature	-40 ~ +85°C



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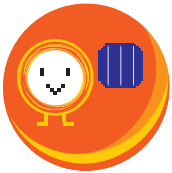


# SS-BP SERIES

Multi Crystalline Solar Panels 250-260W /  
60 Cells / 3 Bus Bar

## High Efficiency, High Performance, Customer Satisfaction

Shinsung Solar Energy satisfies various needs of the customers based on the production of the world's best high efficiency solar modules and by pursuing a product specialization strategy. The company has the most diverse product lines in the industry, and plans to focus on the development of diverse and highly specialized products.



High quality,  
high power

Cell efficiency above  
17.5%  
Module efficiency of  
15.94%



Guarantee products  
for 10 years  
Guarantee efficiency  
for 25 years



-40~+85°C in any  
environment to  
ensure  
high power output



Passed the  
mechanical  
test of  
550kgf/m<sup>2</sup>(5400Pa)  
according to IEC  
61215



Product liability  
insurance  
Financial injury  
insurance

  
shinsung  
SOLAR ENERGY





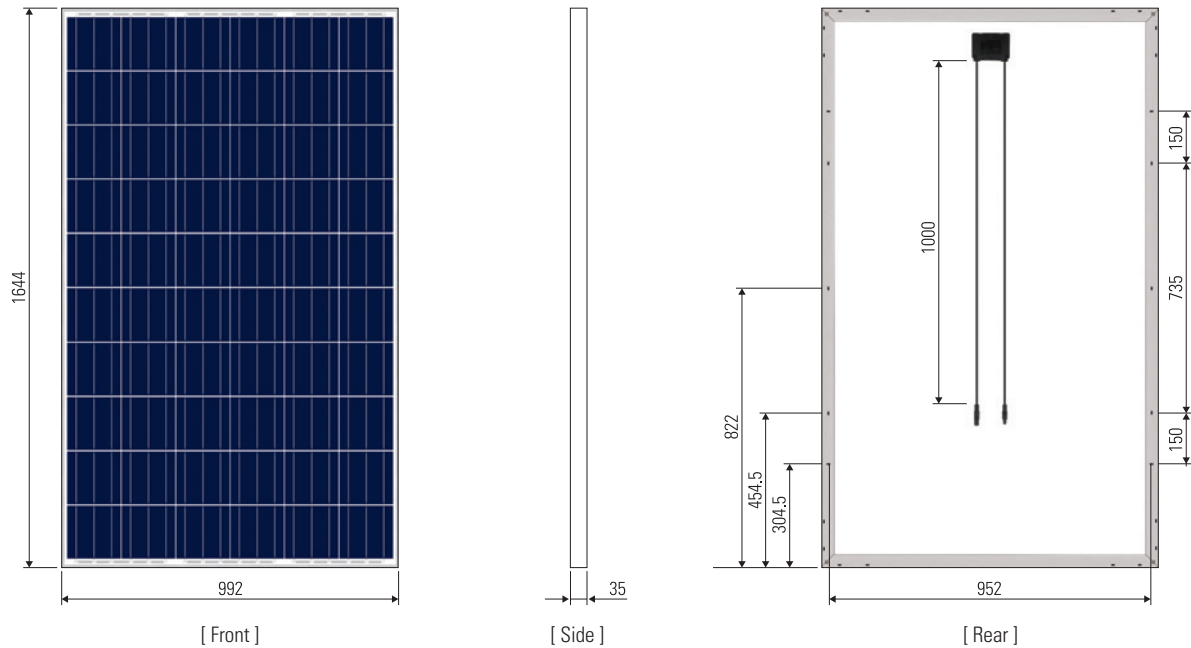
# SS-BP SERIES

## Multi Crystalline Solar Panels 250-260W / 60 Cells / 3 Bus Bar

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### Dimension

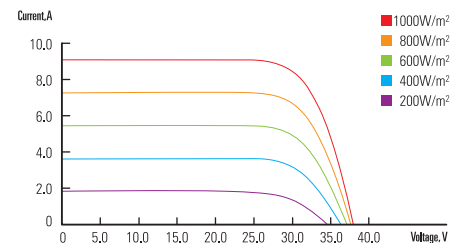
[ unit : mm ]



Item	SS-BP250	SS-BP255	SS-BP260
Peak Power(Wp)	250	255	260
Open Circuit Voltage(V)	37.7	37.8	37.9
Short Circuit Current(A)	8.73	8.89	9.05
Voltage at Pmax(V)	30.2	30.3	30.4
Current at Pmax(A)	8.28	8.42	8.56
Efficiency(%)	15.32	15.63	15.94
Dimension(mm)	992 x 1,644 x 35		
Weight(Kg)	18		

※ All data is tested under STC(Standard Test Conditions). Above data may be changed without prior notice.  
• Peak power tolerance 0~+3.0% • Please inquire of us about correct data by each Certificate Holder.

### I-V Curve



### Mechanical Characteristics

<b>Solar Cells</b>	60 Cells (156x156mm)
<b>Front Glass</b>	Low Iron Tempered Glass
<b>Junction Box</b>	IP 67, 3 Bypass Diode
<b>Output Cable</b>	4mm <sup>2</sup> Cable, MC 4 (Compatible) Type
<b>Frame</b>	AL Alloy Type (Anodized)

### Loading Quantity (unit : pcs)

	60 Cells	72 Cells
<b>Domestic</b>		
2.5-ton	90	50
5-ton	210	150
5-ton+	240	175
11-ton	300	225
<b>Export</b>		
20ft	276	230
40ft	756(Dry) 812(H/Q)	624(Dry) 672(H/Q)

### Temperature Coefficient (Cell)

<b>NOCT</b>	46.8(°C)
$\alpha \Delta$ ISC	0.049(%/K)
$\beta \Delta$ VOC	-0.333(%/K)
$\gamma \Delta$ Pmax	-0.42(%/K)

### Tested Operation Conditions

<b>Max Load</b>	550kgf/m <sup>2</sup> (5400Pa)
<b>Impact Resistance</b>	25mm, 23m/s
<b>Operating Temperature</b>	-40 ~ +85°C

### Safety Ratings & Warranties

<b>Fire Safety Classification</b>	Class "C"
<b>Salt-mist Corrosion Test</b>	Tested
<b>Visible Light Reflected</b>	4.20%~4.30% For more information, please contact us.
<b>Warranty</b>	10 Years limited Product Warranty
	10 Years limited Power Warranty : 90%
	25 Years limited Power Warranty : 80%
<b>Certifications</b>	UL 1703, CEC, IEC 61215 Safety Tested IEC 61730



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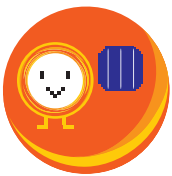


# SS-DP SERIES

Multi Crystalline Solar Panels 300-310W /  
72 Cells / 3 Bus Bar

## High Efficiency, High Performance, Customer Satisfaction

Shinsung Solar Energy satisfies various needs of the customers based on the production of the world's best high efficiency solar modules and by pursuing a product specialization strategy. The company has the most diverse product lines in the industry, and plans to focus on the development of diverse and highly specialized products.



High quality,  
high power

Cell efficiency above  
17.5%  
Module efficiency of  
16.23%



Guarantee products  
for 10 years  
Guarantee efficiency  
for 25 years



-40~+85°C in any  
environment to  
ensure  
high power output



Passed the  
mechanical load  
test of  
550kgf/m<sup>2</sup>(5400Pa)  
according to IEC  
61215



Product liability  
insurance  
Financial injury  
insurance

  
**shinsung**  
SOLAR ENERGY



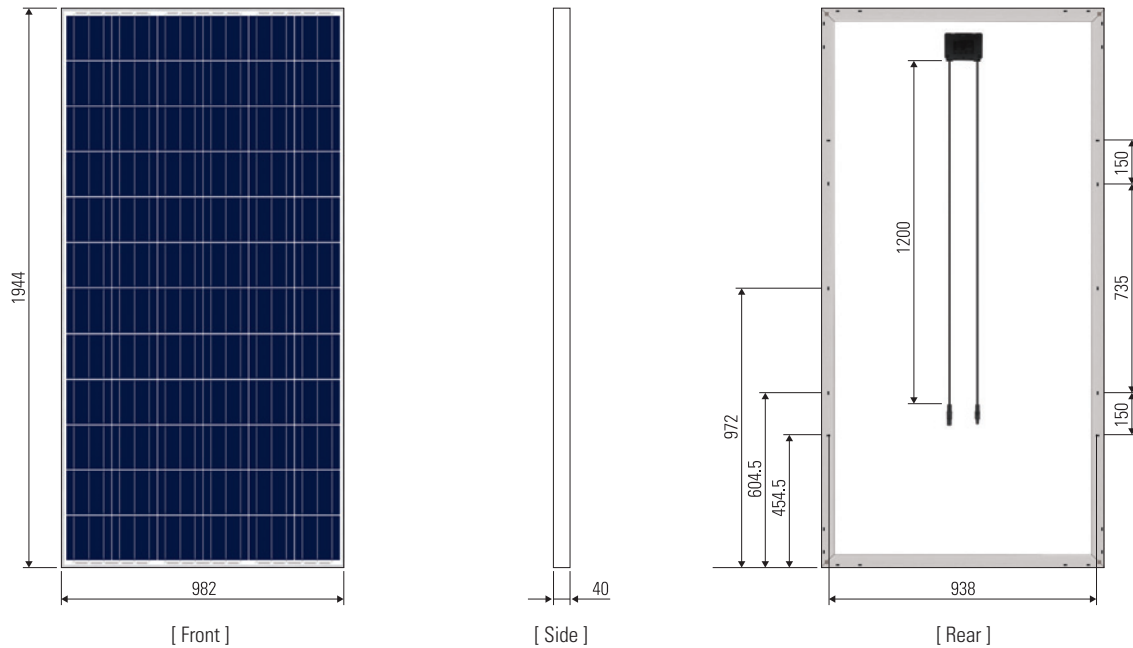
# SS-DP SERIES

## Multi Crystalline Solar Panels 300-310W / 72 Cells / 3 Bus Bar

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### Dimension

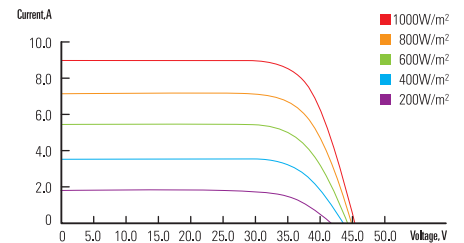
[ unit : mm ]



Item	SS-DP300	SS-DP305	SS-DP310
Peak Power(Wp)	300	305	310
Open Circuit Voltage(V)	45.1	45.2	45.3
Short Circuit Current(A)	8.75	8.87	8.99
Voltage at Pmax(V)	36.3	36.4	36.5
Current at Pmax(A)	8.27	8.39	8.51
Efficiency(%)	15.71	15.97	16.23
Dimension(mm)	982 x 1,944 x 40		
Weight(Kg)	22		

※ All data is tested under STC(Standard Test Conditions). Above data may be changed without prior notice.  
• Peak power tolerance 0~+3.0% • Please inquire of us about correct data by each Certificate Holder.

### I-V Curve



### Mechanical Characteristics

<b>Solar Cells</b>	72 Cells (156x156mm)
<b>Front Glass</b>	Low Iron Tempered Glass
<b>Junction Box</b>	IP 67, 3 Bypass Diode
<b>Output Cable</b>	4mm <sup>2</sup> Cable, MC 4 (Compatible) Type
<b>Frame</b>	AL Alloy Type (Anodized)

### Loading Quantity (unit : pcs)

	60 Cells	72 Cells
<b>Domestic</b>		
2.5-ton	90	50
5-ton	210	150
5-ton+	240	175
11-ton	300	225
<b>Export</b>		
20ft	276	230
40ft	756(Dry) 812(H/Q)	624(Dry) 672(H/Q)

### Temperature Coefficient (Cell)

<b>NOCT</b>	47.9(°C)
$\alpha \Delta$ <b>ISC</b>	0.049(%/K)
$\beta \Delta$ <b>VOC</b>	-0.333(%/K)
$\gamma \Delta$ <b>Pmax</b>	-0.42(%/K)

### Tested Operation Conditions

<b>Max Load</b>	550kgf/m <sup>2</sup> (5400Pa)
<b>Impact Resistance</b>	25mm, 23m/s
<b>Operating Temperature</b>	-40 ~ +85°C

### Safety Ratings & Warranties

<b>Fire Safety Classification</b>	Class "C"
<b>Salt-mist Corrosion Test</b>	Tested
<b>Visible Light Reflected</b>	4.20%~4.30% For more information, please contact us.
<b>Warranty</b>	10 Years limited Product Warranty
	10 Years limited Power Warranty : 90%
	25 Years limited Power Warranty : 80%
<b>Certifications</b>	UL 1703, CEC, IEC 61215 Safety Tested IEC 61730



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