

## Your Complete Solar Solution

Powercom is a global provider and manufacturer of power technology. We provide the complete solar solution with solar cell, modules & PV inverter, in order to lead the way in the coming era of environmentally friendly energy.

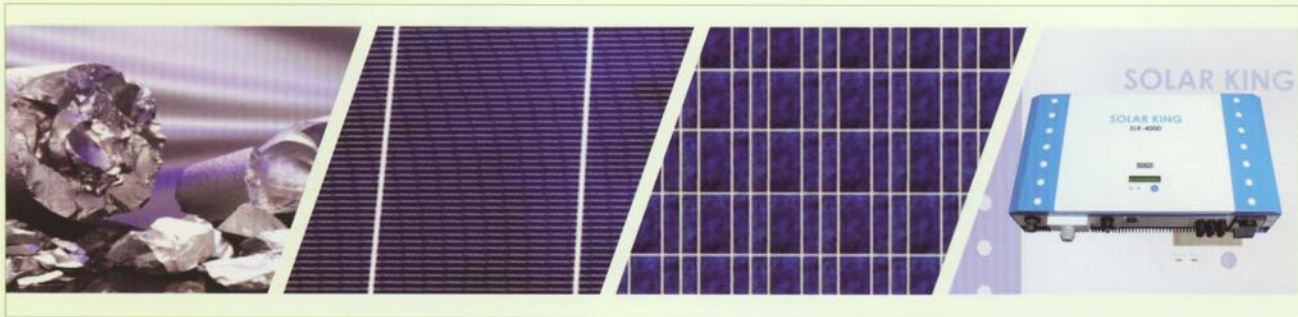
***POWERCOM***

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# POWERCOM

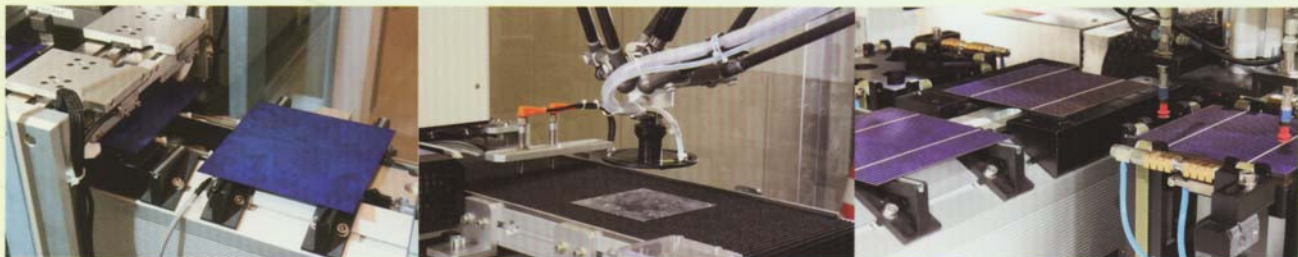
## Complete Solar Intergration

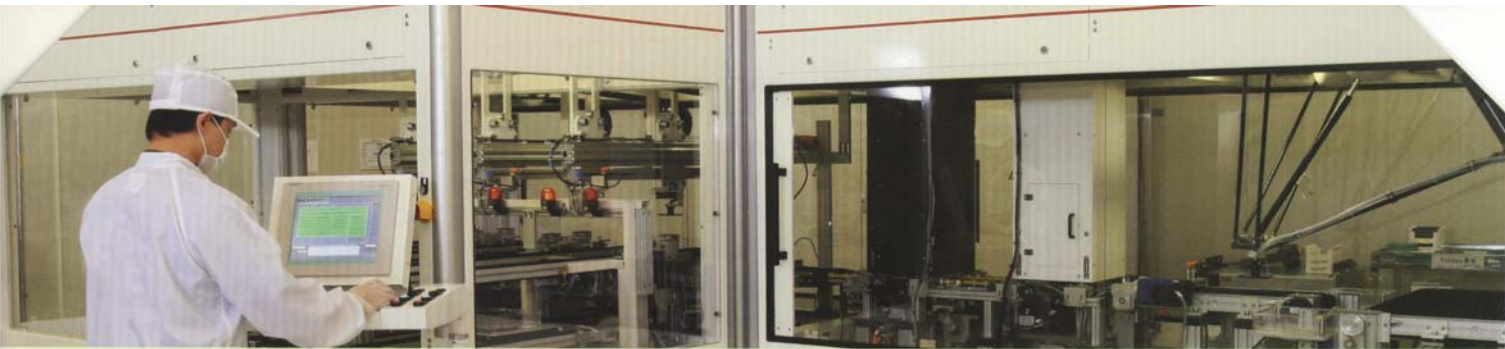


Powercom Group (PCM) is a pioneer among PV companies announced the world's leading vertical integration in solar production. Powercom aims to play a leading role and be a key contributor in shaping the future of the solar energy industry. Our ambition is strong and profitable growth, at a pace at least in line with the development of the PV solar market.

We will achieve this by further expanding capacity across all our businesses, while continuing to pursue ambitious technology development programs and cost-reduction initiatives. Starting with PV inverter, PV module, Solar Cell, and the polysilicon production, Powercom is the first company in Taiwan to achieve the total solar solution. Solar King, the "Grid-Tie" PV inverters with capacity from 1.5KW to 4KW are designed to work with range of solar modules. Solar King has already acquired several certifications such as VDE-0126, DK-5940, RD-1663, and UL-1741 in order to satisfy different worldwide quality demands.

Powercom adopted with Japanese and American automated equipments for the solar module production line which gives 45MW solar module production capacity. Powercom now is capable of producing PV modules range from 85W up to 272W, all modules are TUV & UL certified. Every single module that Powercom produced must go through several steps of QA/QC tests to ensure the product quality.





The solar cell manufacture line utilized the latest, state-of-art European equipments that produce the capacity of 30MW per year which yields the average efficiency of 16%~17%. Future investment capacity will be up to 90MW to fulfill the demand of the world solar installation.

Furthermore, Powercom and its subsidiary company Top Green Energy (TGE) are investing and constructing the first chemical based polysilicon factory in Taiwan. The polysilicon industry is a capital-intensive industry, requiring large investments in equipment and facilities, with high technological entry barriers. Accordingly, only a few companies in the world possess polysilicon-manufacturing technology.

Upon the completion of its phase 1 plant in 2010, Powercom will have the capacity to produce 1,500 tons of polysilicon per year and is expected to become the first polysilicon manufacturer in Taiwan.

Access to this strategic resource represents a competitive advantage for Powercom - being a solar cell, module, and PV inverter manufacturer with its own silicon manufacturing capacity.

This makes Powercom attractive as a strategic partner in joint ventures and other development projects.

Combining the polysilicon, solar cell, module and PV inverter, Powercom brings the best quality and the most completed solar products for our customers.



# Solar Cell



## Type 5" Monocrystalline Cells

Dimension	125mm x 125mm ± 0.5 mm	Model	Efficiency	Power	Maximum PowerCurrent	Maximum PowerVoltage	Short CircuitCurrent	Open CircuitVoltage
			Eff (%)	Ppm (W)	Ipm (A)	Vpm (V)	Isc (A)	Voc (V)
Thickness (Si)	240 μm ± 40 μm	TS-125-140	14.0-15.0	2.15	4.32	0.492	4.78	0.602
		TS-125-150	15.0-15.2	2.23	4.46	0.500	4.86	0.607
Front Side	Silicon nitride anti-reflection coating 1.5mm silver busbar	TS-125-152	15.2-15.4	2.26	4.51	0.504	4.90	0.609
		TS-125-154	15.4-15.6	2.29	4.56	0.507	4.93	0.611
Back Side	Full surface aluminum back-surface-field 4.5mm (silver/aluminum) continuous soldering pads	TS-125-156	15.6-15.8	2.32	4.60	0.510	4.95	0.613
		TS-125-158	15.8-16.0	2.35	4.64	0.512	4.98	0.615
		TS-125-160	16.0-16.2	2.38	4.68	0.514	5.02	0.617
		TS-125-162	16.2-16.4	2.41	4.72	0.516	5.05	0.619
		TS-125-164	16.4-16.6	2.44	4.76	0.518	5.09	0.620
		TS-125-166	16.6-16.8	2.47	4.80	0.520	5.14	0.621
		TS-125-168	16.8-17.0	2.50	4.84	0.521	5.18	0.622
		TS-125-170	17.0-17.2	2.54	4.87	0.522	5.24	0.623
		TS-125-172	17.2-17.4	2.57	4.91	0.523	5.29	0.624
		TS-125-174	17.4-17.6	2.60	4.96	0.524	5.34	0.625
TS-125-176	17.6-17.8	2.63	5.01	0.525	5.39	0.626		
TS-125-178	17.8-18.0	2.66	5.06	0.526	5.44	0.627		

\* Under standard test condition : 1000W/m<sup>2</sup>, AM 1.5, 25°C



## Type 5" Multicrystalline Cells

Dimension	125mm x 125mm ± 0.5 mm	Model	Efficiency	Power	Maximum PowerCurrent	Maximum PowerVoltage	Short CircuitCurrent	Open CircuitVoltage
			Eff (%)	Ppm (W)	Ipm (A)	Vpm (V)	Isc (A)	Voc (V)
Thickness (Si)	240 μm ± 40 μm	TM-125-130	13.4-14.0	2.11	4.31	0.490	4.79	0.597
		TM-125-140	14.0-14.2	2.19	4.42	0.498	4.86	0.600
Front Side	Silicon nitride anti-reflection coating 1.5mm silver busbar	TM-125-142	14.2-14.4	2.22	4.44	0.503	4.88	0.601
		TM-125-144	14.4-14.6	2.25	4.46	0.505	4.90	0.602
Back Side	Full surface aluminum back-surface-field 4.5mm (silver/aluminum) continuous soldering pads	TM-125-146	14.6-14.8	2.28	4.50	0.507	4.95	0.604
		TM-125-148	14.8-15.0	2.31	4.58	0.509	4.98	0.605
		TM-125-150	15.0-15.2	2.34	4.63	0.510	5.03	0.607
		TM-125-152	15.2-15.4	2.38	4.66	0.511	5.06	0.608
		TM-125-154	15.4-15.6	2.41	4.71	0.512	5.12	0.609
		TM-125-156	15.6-15.8	2.44	4.81	0.513	5.17	0.610
		TM-125-158	15.8-16.0	2.47	4.85	0.514	5.21	0.612
		TM-125-160	16.0-16.2	2.51	4.87	0.515	5.26	0.613
		TM-125-162	16.2-16.4	2.55	4.94	0.516	5.31	0.614
		TM-125-164	16.4-16.6	2.58	4.99	0.517	5.36	0.615
TM-125-166	16.6-16.8	2.61	5.03	0.518	5.41	0.616		
TM-125-168	16.8-17.0	2.64	5.09	0.519	5.46	0.617		

\* Under standard test condition : 1000W/m<sup>2</sup>, AM 1.5, 25°C

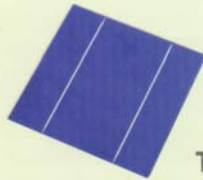
# Solar Cell



## Type 6" Monocrystalline Cells

Dimension	156 mm x 156mm $\pm$ 0.5 mm	Model	Efficiency	Power	Maximum PowerCurrent	Maximum PowerVoltage	Short CircuitCurrent	Open CircuitVoltage
			Eff (%)	Ppm (W)	Ipm (A)	Vpm (V)	Isc (A)	Voc (V)
Thickness (Si)	240 $\mu$ m $\pm$ 40 $\mu$ m							
Front Side	Silicon nitride anti-reflection coating 1.5 mm silver busbar	TS-156-140	14.0-15.0	3.46	7.11	0.487	7.69	0.602
		TS-156-150	15.0-15.2	3.58	7.32	0.495	7.81	0.607
		TS-156-152	15.2-15.4	3.63	7.36	0.498	7.88	0.609
Back Side	Full surface aluminum back-surface-field 4.5 mm (silver/aluminum) continuous soldering pads	TS-156-154	15.4-15.6	3.68	7.41	0.500	7.93	0.611
		TS-156-156	15.6-15.8	3.73	7.51	0.502	7.96	0.613
		TS-156-158	15.8-16.0	3.77	7.56	0.504	8.01	0.615
		TS-156-160	16.0-16.2	3.82	7.63	0.506	8.07	0.617
		TS-156-162	16.2-16.4	3.87	7.68	0.508	8.12	0.619
		TS-156-164	16.4-16.6	3.92	7.76	0.509	8.18	0.620
		TS-156-166	16.6-16.8	3.97	7.84	0.510	8.27	0.621
		TS-156-168	16.8-17.0	4.01	7.89	0.512	8.33	0.622
		TS-156-170	17.0-17.2	4.06	7.91	0.513	8.40	0.623
		TS-156-172	17.2-17.4	4.12	8.02	0.514	8.47	0.624
		TS-156-174	17.4-17.6	4.17	8.10	0.515	8.54	0.625
TS-156-176	17.6-17.8	4.22	8.16	0.516	8.60	0.626		
TS-156-178	17.8-18.0	4.27	8.26	0.517	8.67	0.627		

\* Under standard test condition : 1000W/m<sup>2</sup>, AM 1.5, 25°C



## Type 6" Multicrystalline Cells

Dimension	156 mm x 156mm $\pm$ 0.5 mm	Model	Efficiency	Power	Maximum PowerCurrent	Maximum PowerVoltage	Short CircuitCurrent	Open CircuitVoltage
			Eff (%)	Ppm (W)	Ipm (A)	Vpm (V)	Isc (A)	Voc (V)
Thickness (Si)	240 $\mu$ m $\pm$ 40 $\mu$ m							
Front Side	Silicon nitride anti-reflection coating 1.5 mm silver busbar	TM-156-130	13.4-14.0	3.28	6.80	0.497	7.55	0.596
		TM-156-140	14.0-14.2	3.41	6.89	0.500	7.66	0.599
		TM-156-142	14.2-14.4	3.46	6.94	0.502	7.71	0.601
Back Side	Full surface aluminum back-surface-field 4.5 mm (silver/aluminum) continuous soldering pads	TM-156-144	14.4-14.6	3.50	6.98	0.503	7.76	0.602
		TM-156-146	14.6-14.8	3.55	7.11	0.504	7.81	0.603
		TM-156-148	14.8-15.0	3.60	7.16	0.505	7.87	0.605
		TM-156-150	15.0-15.2	3.65	7.28	0.506	7.91	0.607
		TM-156-152	15.2-15.4	3.70	7.31	0.507	7.95	0.608
		TM-156-154	15.4-15.6	3.75	7.43	0.508	7.99	0.610
		TM-156-156	15.6-15.8	3.80	7.46	0.510	8.02	0.612
		TM-156-158	15.8-16.0	3.85	7.49	0.512	8.05	0.613
		TM-156-160	16.0-16.2	3.90	7.53	0.514	8.08	0.614
		TM-156-162	16.2-16.4	3.95	7.59	0.516	8.11	0.615
		TM-156-164	16.4-16.6	4.00	7.66	0.518	8.14	0.616
TM-156-166	16.6-16.8	4.05	7.73	0.520	8.17	0.617		
TM-156-168	16.8-17.0	4.10	7.80	0.521	8.20	0.618		

\* Under standard test condition : 1000W/m<sup>2</sup>, AM 1.5, 25°C

# Solar Module

85Wp Multicrystalline silicon photovoltaic module

## PPV-085M5



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	85W
Voltage @ Pmax (Vpm)	17.78V
Current @ Pmax (Ipm)	4.78A
Open circuit voltage (Voc)	21.77V
Short circuit current (Isc)	5.12A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 12V system
system Cell	5" Multi-crystalline silicon
No. of cells and connections	36 PCS in series (4 x 9)
Efficiency of module	12.8 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.32 %/°C
Temperature coefficient of Isc	+0.038 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1195 x 555 x 35 mm
Weight	Approx. 9Kg
Packing configuration	Vertical
Size of carton	1235 x 1093 x 590 mm
Pallet quantity	30 PCS / Pallet
Loading capacity (20 ft. container)	24 Pallet
Loading capacity (40 ft. container)	54 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	2 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5

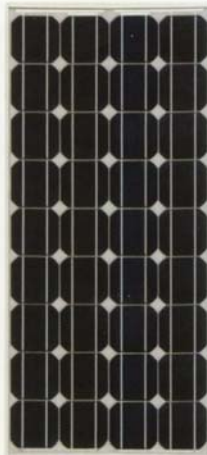




# Solar Module

87Wp Monocrystalline silicon photovoltaic module

## PPV-087S5



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	87W
Voltage @ Pmax (Vpm)	18.5V
Current @ Pmax (Ipm)	4.73A
Open circuit voltage (Voc)	21.98V
Short circuit current (Isc)	5.1A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 12V system
system Cell	5" Mono-crystalline silicon
No. of cells and connections	36 PCS in series (4 x 9)
Efficiency of module	13.2 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.34 %/°C
Temperature coefficient of Isc	+0.09 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

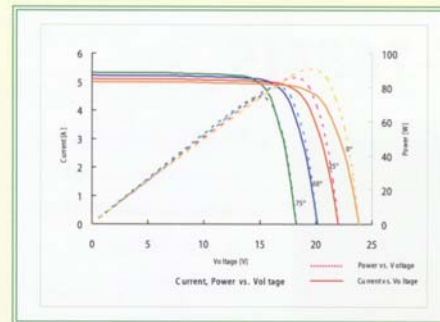
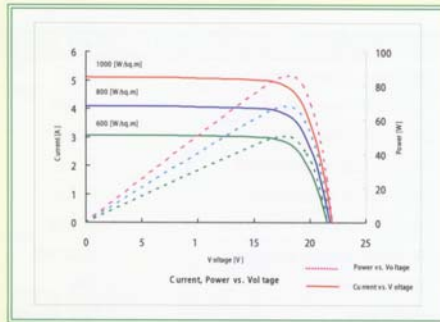
### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1195 x 555 x 35 mm
Weight	Approx. 9Kg
Packing configuration	Vertical
Size of carton	1235 x 1093 x 590 mm
Pallet quantity	30 PCS / Pallet
Loading capacity (20 ft. container)	24 Pallet
Loading capacity (40 ft. container)	54 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	2 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5

## 87Wp Monocrystalline silicon photovoltaic module

# PPV-087S5

### I-V CURVES



### QUALITY

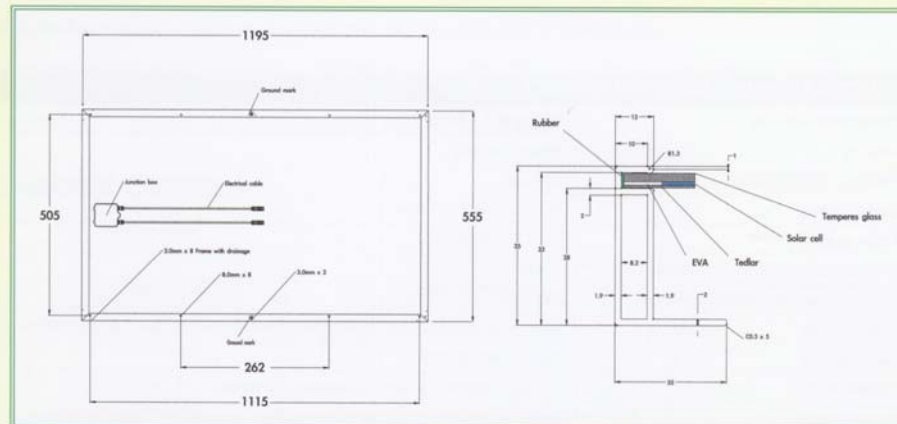
ISO 9001:2000 certified; UL certified.  
IEC/EN 61215 and IEC/EN 61730 are certified by TÜV.  
Warranty: 10 years limited warranty of 90% power output and  
25 years limited warranty of 80% power output.

### INSTALL AND SAFETY GUIDE

**DO NOT** damage or scratch the rear surface of the module  
**DO NOT** handle or install modules when they are wet.  
**ONLY** qualified personnel should install or perform maintenance.  
**BE AWARE** of dangerous high DC voltage.



### MODULE DIMENSIONS



\*\* This document summarizes product specifications which are subject to change without prior notice.

# Solar Module

168Wp Multicrystalline silicon photovoltaic module

## PPV-168M5



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	168W
Voltage @ Pmax (Vpm)	35.56V
Current @ Pmax (Ipm)	4.74A
Open circuit voltage (Voc)	43.5V
Short circuit current (Isc)	5.12A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	5" Multi-crystalline silicon
No. of cells and connections	72 PCS in series (6 x 12)
Efficiency of module	13.2 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.32 %/°C
Temperature coefficient of Isc	+0.038 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1576 x 807 x 50 mm
Weight	Approx. 16.6Kg
Packing configuration	Vertical
Size of carton	1617 x 1144 x 841 mm
Pallet quantity	22 PCS / Pallet
Loading capacity (20 ft. container)	12 Pallet
Loading capacity (40 ft. container)	28 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5



# Solar Module

175Wp Multicrystalline silicon photovoltaic module

## PPV-175M6



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	175W
Voltage @ Pmax (Vpm)	23.7V
Current @ Pmax (Ipm)	7.38A
Open circuit voltage (Voc)	28.9V
Short circuit current (Isc)	7.86A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	6" Multi-crystalline silicon
No. of cells and connections	48 PCS in series (6 x 8)
Efficiency of module	13.4 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.32 %/°C
Temperature coefficient of Isc	+0.038 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1316 x 995 x 50 mm
Weight	Approx. 16.8Kg
Packing configuration	Horizontal
Size of carton	1373 x 1071 x 955 mm
Pallet quantity	18 PCS / Pallet
Loading capacity (20 ft. container)	16 Pallet
Loading capacity (40 ft. container)	32 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5



# Solar Module

175Wp Monocrystalline silicon photovoltaic module

## PPV-175S5



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	175W
Voltage @ Pmax (Vpm)	37.0V
Current @ Pmax (Ipm)	4.73A
Open circuit voltage (Voc)	43.9V
Short circuit current (Isc)	5.1A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	5" Mono-crystalline silicon
No. of cells and connections	72 PCS in series (6 x 12)
Efficiency of module	13.7 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.34 %/°C
Temperature coefficient of Isc	+0.09 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

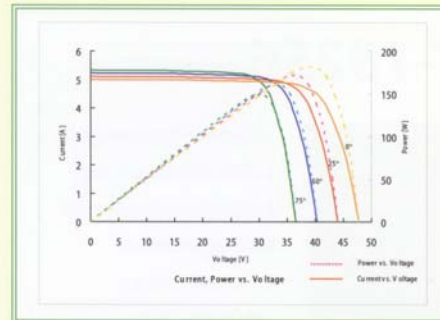
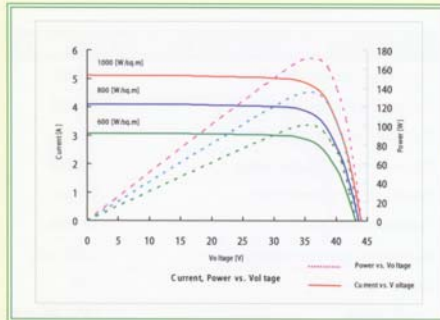
### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1576 x 807 x 50 mm
Weight	Approx. 16.6Kg
Packing configuration	Vertical
Size of carton	1617 x 1144 x 841 mm
Pallet quantity	22 PCS / Pallet
Loading capacity (20 ft. container)	12 Pallet
Loading capacity (40 ft. container)	28 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5

## 175Wp Monocrystalline silicon photovoltaic module

# PPV-175S5

### I-V CURVES



### QUALITY

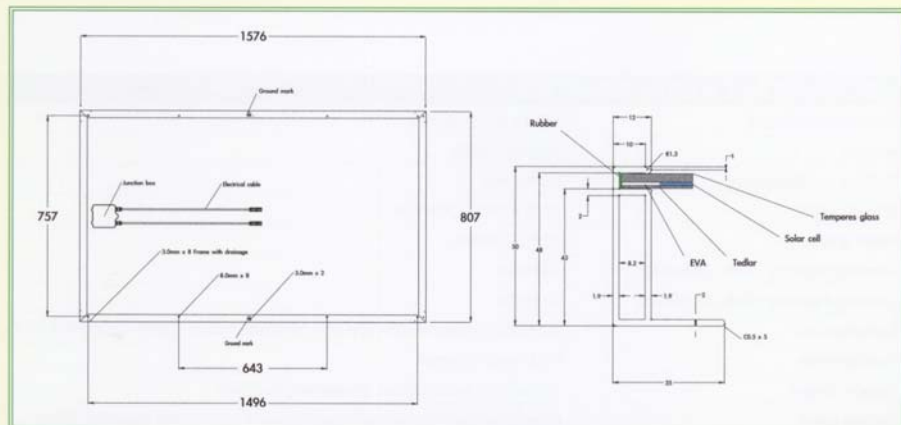
ISO 9001:2000 certified; UL certified.  
IEC/EN 61215 and IEC/EN 61730 are certified by TÜV.  
Warranty: 10 years limited warranty of 90% power output and  
25 years limited warranty of 80% power output.

### INSTALL AND SAFETY GUIDE

**DO NOT** damage or scratch the rear surface of the module  
**DO NOT** handle or install modules when they are wet.  
**ONLY** qualified personnel should install or perform maintenance.  
**BE AWARE** of dangerous high DC voltage.



### MODULE DIMENSIONS



\*\* This document summarizes product specifications which are subject to change without prior notice.



# Solar Module

182Wp Monocrystalline silicon photovoltaic module

## PPV-182S6



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	182W
Voltage @ Pmax (Vpm)	23.95V
Current @ Pmax (Ipm)	7.6A
Open circuit voltage (Voc)	29.32V
Short circuit current (Isc)	8.15A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	6" Mono-crystalline silicon
No. of cells and connections	48 PCS in series (6 x 8)
Efficiency of module	13.9 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.34 %/°C
Temperature coefficient of Isc	+0.09 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1316 x 995 x 50 mm
Weight	Approx. 16.8Kg
Packing configuration	Horizontal
Size of carton	1373 x 1071 x 955 mm
Pallet quantity	18 PCS / Pallet
Loading capacity (20 ft. container)	16 Pallet
Loading capacity (40 ft. container)	32 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5



# Solar Module

196Wp Multicrystalline silicon photovoltaic module

## PPV-196M6



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	196W
Voltage @ Pmax (Vpm)	26.67V
Current @ Pmax (Ipm)	7.36A
Open circuit voltage (Voc)	32.5V
Short circuit current (Isc)	7.86A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	6" Multi-crystalline silicon
No. of cells and connections	54 PCS in series (6 x 9)
Efficiency of module	13.4 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.32 %/°C
Temperature coefficient of Isc	+0.038 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

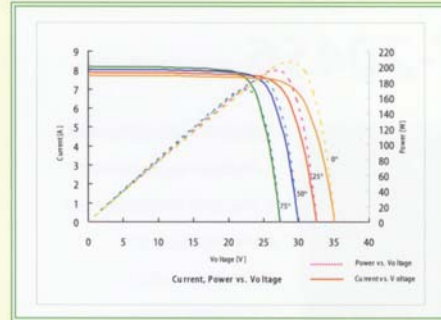
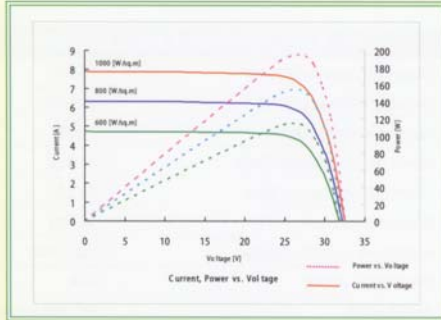
### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1474 x 995 x 50 mm
Weight	Approx. 18.6Kg
Packing configuration	Horizontal
Size of carton	1531 x 1071 x 955 mm
Pallet quantity	18 PCS / Pallet
Loading capacity (20 ft. container)	14 Pallet
Loading capacity (40 ft. container)	28 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5

## 196Wp Multicrystalline silicon photovoltaic module

# PPV-196M6

### I-V CURVES



### QUALITY

ISO 9001:2000 certified; UL certified.

IEC/EN 61215 and IEC/EN 61730 are certified by TÜV.

Warranty: 10 years limited warranty of 90% power output and 25 years limited warranty of 80% power output.

### INSTALL AND SAFETY GUIDE

**DO NOT** damage or scratch the rear surface of the module

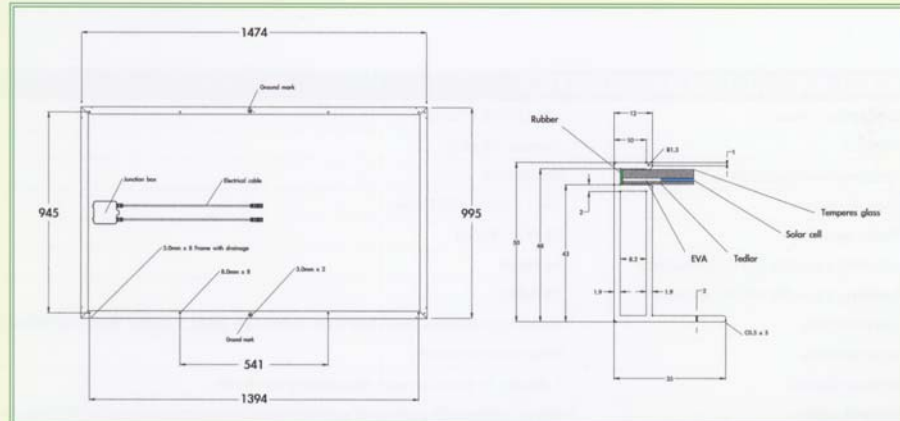
**DO NOT** handle or install modules when they are wet.

**ONLY** qualified personnel should install or perform maintenance.

**BE AWARE** of dangerous high DC voltage.



### MODULE DIMENSIONS



\*\* This document summarizes product specifications which are subject to change without prior notice.



# Solar Module

204Wp Monocrystalline silicon photovoltaic module

## PPV-204S6



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	204W
Voltage @ Pmax (Vpm)	26.94V
Current @ Pmax (Ipm)	7.58A
Open circuit voltage (Voc)	32.98V
Short circuit current (Isc)	8.15A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	6" Mono-crystalline silicon
No. of cells and connections	54 PCS in series (6 x 9)
Efficiency of module	13.9 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.34 %/°C
Temperature coefficient of Isc	+0.09 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1474 x 995 x 50 mm
Weight	Approx. 18.6Kg
Packing configuration	Horizontal
Size of carton	1531 x 1071 x 955 mm
Pallet quantity	18 PCS / Pallet
Loading capacity (20 ft. container)	14 Pallet
Loading capacity (40 ft. container)	28 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5

# Solar Module

216Wp Multicrystalline silicon photovoltaic module

## PPV-216M6



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	216W
Voltage @ Pmax (Vpm)	29.35V
Current @ Pmax (Ipm)	7.36A
Open circuit voltage (Voc)	36.68V
Short circuit current (Isc)	8.06A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	6" Multi-crystalline silicon
No. of cells and connections	60 PCS in series (6 x 10)
Efficiency of module	13.3 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.32 %/°C
Temperature coefficient of Isc	+0.038 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1632 x 995 x 50 mm
Weight	Approx. 20.4Kg
Packing configuration	Horizontal
Size of carton	1689 x 1071 x 955 mm
Pallet quantity	18 PCS / Pallet
Loading capacity (20 ft. container)	12 Pallet
Loading capacity (40 ft. container)	26 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5





# Solar Module

227Wp Monocrystalline silicon photovoltaic module

## PPV-227S6



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	227W
Voltage @ Pmax (Vpm)	29.93V
Current @ Pmax (Ipm)	7.59A
Open circuit voltage (Voc)	36.6V
Short circuit current (Isc)	8.15A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	6" Mono-crystalline silicon
No. of cells and connections	60 PCS in series (6 x 10)
Efficiency of module	14 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.34 %/°C
Temperature coefficient of Isc	+0.09 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

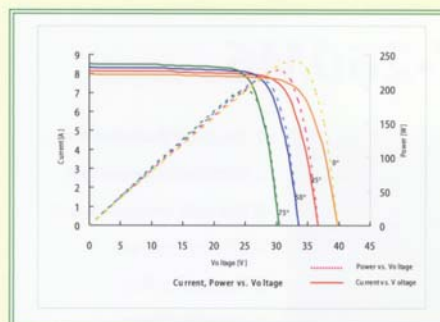
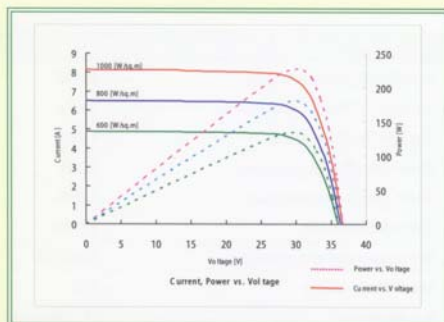
### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1632 x 995 x 50 mm
Weight	Approx. 20.4Kg
Packing configuration	Horizontal
Size of carton	1689 x 1071 x 955 mm
Pallet quantity	18 PCS / Pallet
Loading capacity (20 ft. container)	12 Pallet
Loading capacity (40 ft. container)	26 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5

## 227Wp Monocrystalline silicon photovoltaic module

# PPV-227S6

### I-V CURVES



### QUALITY

ISO 9001:2000 certified; UL certified.

IEC/EN 61215 and IEC/EN 61730 are certified by TÜV.

Warranty: 10 years limited warranty of 90% power output and 25 years limited warranty of 80% power output.

### INSTALL AND SAFETY GUIDE

**DO NOT** damage or scratch the rear surface of the module

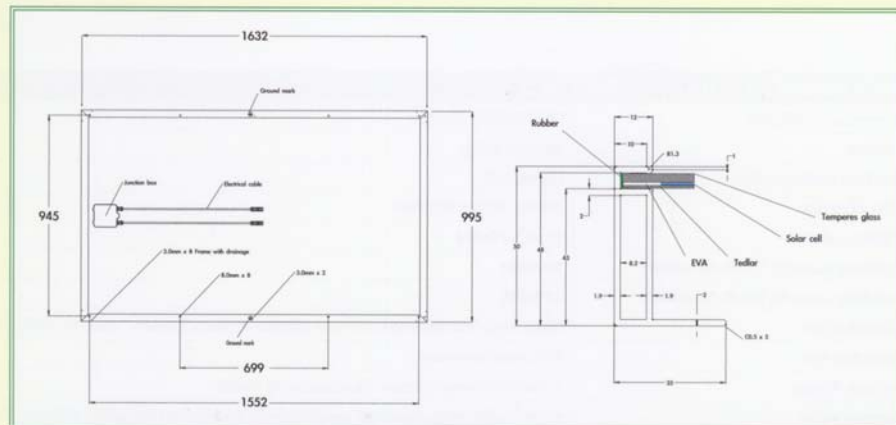
**DO NOT** handle or install modules when they are wet.

**ONLY** qualified personnel should install or perform maintenance.

**BE AWARE** of dangerous high DC voltage.



### MODULE DIMENSIONS



\*\* This document summarizes product specifications which are subject to change without prior notice.

# Solar Module

260Wp Multicrystalline silicon photovoltaic module

## PPV-260M6



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	260W
Voltage @ Pmax (Vpm)	35.5V
Current @ Pmax (Ipm)	7.32A
Open circuit voltage (Voc)	43.3V
Short circuit current (Isc)	7.86A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	6" Multi-crystalline silicon
No. of cells and connections	72 PCS in series (6 x 12)
Efficiency of module	13.4 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.32 %/°C
Temperature coefficient of Isc	+0.038 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

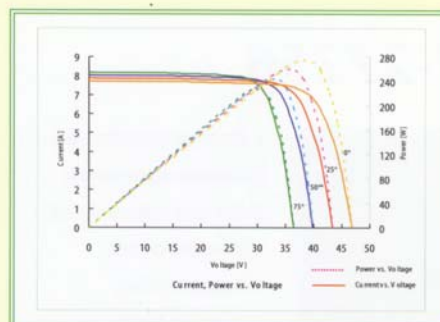
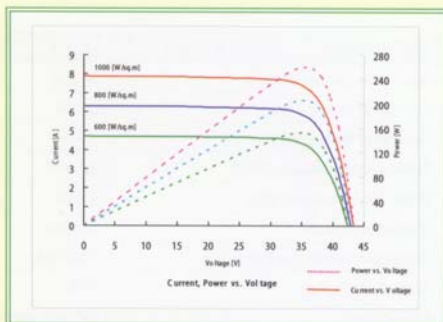
### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1947 x 995 x 50 mm
Weight	Approx. 24Kg
Packing configuration	Horizontal
Size of carton	2005 x 1071 x 955 mm
Pallet quantity	18 PCS / Pallet
Loading capacity (20 ft. container)	10 Pallet
Loading capacity (40 ft. container)	22 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5

## 260Wp Multicrystalline silicon photovoltaic module

# PPV-260M6

### I-V CURVES



### QUALITY

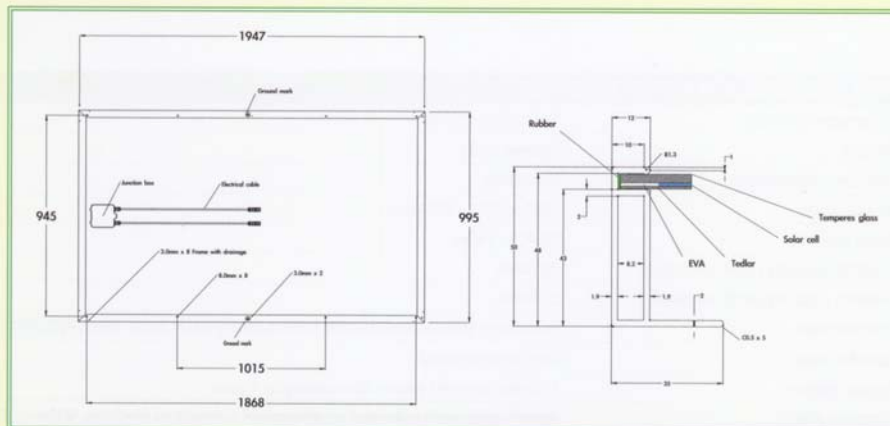
ISO 9001:2000 certified; UL certified.  
IEC/EN 61215 and IEC/EN 61730 are certified by TÜV.  
Warranty: 10 years limited warranty of 90% power output and 25 years limited warranty of 80% power output.

### INSTALL AND SAFETY GUIDE

**DO NOT** damage or scratch the rear surface of the module  
**DO NOT** handle or install modules when they are wet.  
**ONLY** qualified personnel should install or perform maintenance.  
**BE AWARE** of dangerous high DC voltage.



### MODULE DIMENSIONS



\*\* This document summarizes product specifications which are subject to change without prior notice.

PPV-260M6

# Solar Module

272Wp Monocrystalline silicon photovoltaic module

## PPV-272S6



1. Electrical insulation test.
2. Outdoor exposure test.
3. Hot-spot endurance test.
4. UV-exposure test
5. Thermal cycling.
6. Humidity freeze.
7. Damp heat test.
8. Robustness of terminations test.
9. Wet leakage current test.
10. Mechanical load test.
11. Hail impact test.
12. Bypass diode thermal test.

### ELECTRICAL CHARACTERISTICS

Maximum power (Pmax)	272W
Voltage @ Pmax (Vpm)	35.9V
Current @ Pmax (Ipm)	7.57A
Open circuit voltage (Voc)	43.97V
Short circuit current (Isc)	8.15A
Output tolerance	+/- 3%
Maximum system voltage	1000 Vdc
Series fuse rating	10A
Application	DC 24V system
system Cell	6" Mono-crystalline silicon
No. of cells and connections	72 PCS in series (6 x 12)
Efficiency of module	14 %
Temperature coefficient of Pmax	-0.37 %/°C
Temperature coefficient of Voc	-0.34 %/°C
Temperature coefficient of Isc	+0.09 %/°C

\* Measured at STC (Standard Test Condition; 1000W/m<sup>2</sup> irradiance, AM 1.5G and 25°C)

### ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 to +85°C
Storage temperature	-40 to +85°C

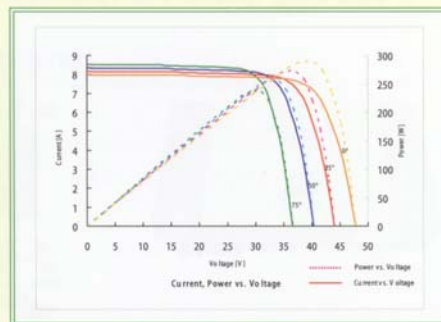
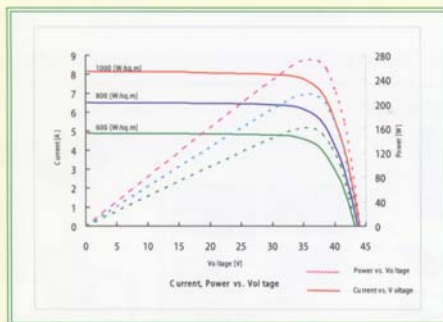
### MECHANICAL CHARACTERISTICS

Dimension (WxLxH)	1947 x 995 x 50 mm
Weight	Approx. 24Kg
Packing configuration	Horizontal
Size of carton	2005 x 1071 x 955 mm
Pallet quantity	18 PCS / Pallet
Loading capacity (20 ft. container)	10 Pallet
Loading capacity (40 ft. container)	22 Pallet
Construction	Front: high transmission low-iron tempered glass, 3.2mm Back: PET/PET/EVA Encapsulates: EVA
Junction box	IP65, weatherproof
Bypass diodes	3 diodes to avoid power decreasing by shade
Output cable	4mm <sup>2</sup> cable with polarized weatherproof connectors Negative 900mm, Positive 900mm
Frame	Clear anodized aluminum, AL6063-T5

## 272Wp Monocrystalline silicon photovoltaic module

# PPV-272S6

### I-V CURVES



### QUALITY

ISO 9001:2000 certified; UL certified.

IEC/EN 61215 and IEC/EN 61730 are certified by TÜV.

Warranty: 10 years limited warranty of 90% power output and 25 years limited warranty of 80% power output.

### INSTALL AND SAFETY GUIDE

**DO NOT** damage or scratch the rear surface of the module

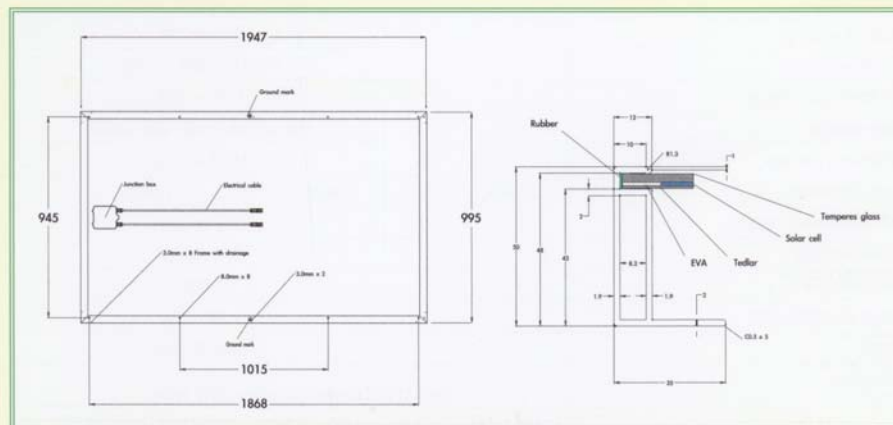
**DO NOT** handle or install modules when they are wet.

**ONLY** qualified personnel should install or perform maintenance.

**BE AWARE** of dangerous high DC voltage.



### MODULE DIMENSIONS



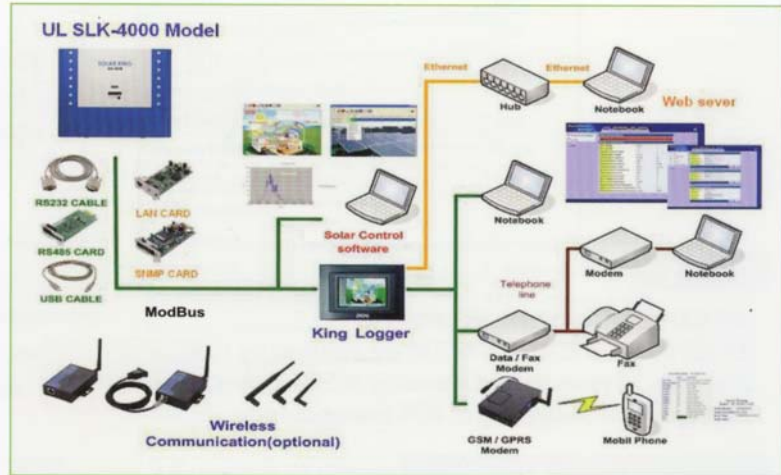
\*\* This document summarizes product specifications which are subject to change without prior notice.

PPV-272S6

# PV Inverter

## Solar King (Grid-Tie Technology)

On grid Solar Inverter communication system diagram.



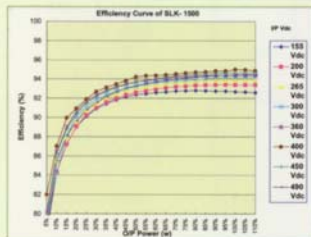
Model	SLK-1500	SLK-2000	SLK-3000	SLK-4000	SLK-6000
Input Data					
Maximum Input power	1750W	2340W	3510W	4700W	6500W
PV OPEN voltage	500VDC				600VDC
Nominal DC voltage	360~400V				
MPPT voltage range	150V to 500V +/-5%				150V to 600V +/-5%
System start-up voltage	100 +/-5%				
Working voltage	100 +/-5% ~ 500 -5% +0%V				100 +/-5% ~ 600 -5% +0%V
Initial feeding voltage	150V +/-5%				
Max. input current	7.5ADC	10ADC	15ADC	20ADC	30ADC
Full rating working range	200V to 500V			250V to 500V	250V to 600V
Shutdown voltage	80V typical				
DC voltage ripple	< 10%				
DC insulation resistance	> 8M ohm				
DC switch	ON/OFF 20A				ON/OFF 30A
DC connector	Tyco or MC contact (1 pair)-cable type			Tyco or MC contact (3 pair)	
Attached DC connector	Tyco or MC contact (1 pair)				

Model	SLK-1500	SLK-2000	SLK-3000	SLK-4000	SLK-6000
<b>Output Data</b>					
Nominal output power	1500W	2000W	3000W <sup>7</sup>	4000W	6000W
Maximum output power	1650W	2200W	3300W <sup>8</sup>	4400W	6000W
Operational voltage range <sup>1</sup>	198V, minimum 256V, maximum				
Operational normal voltage	230Vac				
Operational frequency range	50/60Hz, auto selection 47.5≤f <sub>50</sub> ≤50.2 for 50Hz <sup>2</sup> 59.3≤f <sub>60</sub> ≤60.5 for 60Hz <sup>3</sup>				
Nominal output current	6.6A	8.7A	13.0A	17.4A	26.1A
O/P current distortion <sup>4</sup>	THD<5%, each harmonics< 3%				
Power Factor	> 0.99				
DC current injection	<0.5% of rated inverter output current				
Internal power consumption	< 7W				
Standby power (at night)	< 0.1W				
Minimum conversion efficiency (DC/AC)	> 90% Under input voltage >210V, load>20%				
Maximum Conversion Efficiency (DC/AC) <sup>5</sup>	> 94%	> 95%	> 95%	> 96%	> 96%
European Efficiency	> 93%	> 94%	> 94%	> 95%	> 95%
GFCI threshold <sup>6</sup>	See ground fault current detection				
Ground current detection range	0 ~ 500mA				
Ground current detection frequency	0 ~ 700Hz				
Protection degree	IP 65 or IP43				
Operation temperature	-25 to 55° C				
Humidity	0 to 95%, non-condensing				
Heat Dissipation	Convection				
Acoustic noise level	< 40dB, A-weighted, frequency up to 20kHz				
Altitude	Up to 3000m without power derating, 5° C derated for each additional 500m				
Physical :W x D x H (mm)	352x300x133	352x300x133	352x300x143	550 x 300 x 133	550 x 420 x 143
Physical :Weight (kg)	14	14	14	21	24
Shipping :W x D x H (mm)	460x460x265	460x460x265	460x460x265	660 x 460 x 265	660 x 580 x 265
Shipping :Weight (kg)	16	16	16	23	26

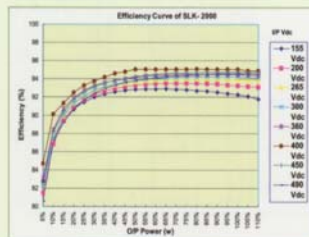
The relation of input DC voltage and output power is shown in figure. Once input V is less than 250V, the relation of I/P V and load % is :  $Load\% = 0.4 \times V$

- 1.VDE0126-1-1, it is -20% / +15%
- 2.Based on the limit of VDE0126-1-1
- 3.Based on limit of IEEE1547
- 4.Under utility voltage THD<3%, reference IEEE1547, EN61000-3-2
- 5.under input voltage ≥ 400V, full rated output power, 25°C ambient
- 6.According to VDE0126-1-1 requirement
- 7.Based on the output voltage is higher than 200Vac
- 8.Based on the output voltage is higher than 220Vac

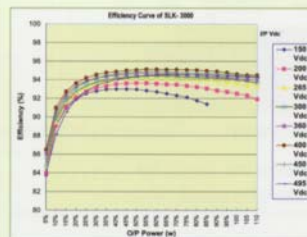
## The maximum efficiency curve :



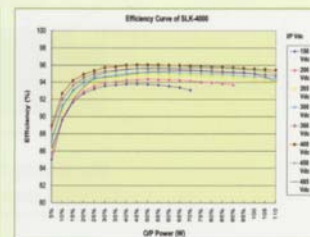
SLK-1500



SLK-2000



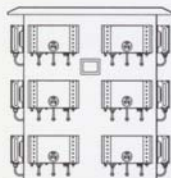
SLK-3000



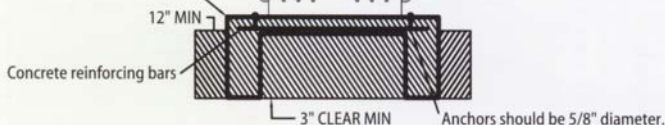
SLK-4000



# SLK TOWER



Recommended Dimensions for new concrete slab : 48" x 48" x 5" thick.



The footing dimensions should be 12" x 12" under the entire perimeter.

## Economic

- High efficiency up to 96%
- Low install price
- For multiple MPPT function

## Safe

- Integrated ESS DC load disconnecting unit
- Integrated AC breaker disconnecting unit

## Flexible

- Module design
- Combination of different SLK-Series types

## Easy to use

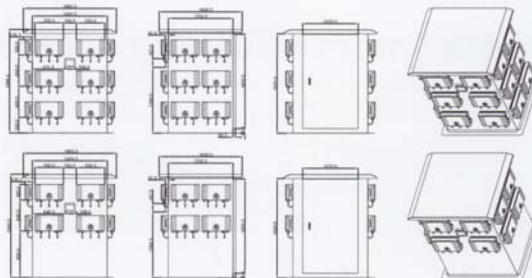
- Delivered as a turnkey solution
- Easy installation
- Integrated data acquisition with data logger

## Monitoring

- Color display
- Integrated information
- Touch panel operating

## Solar King Tower

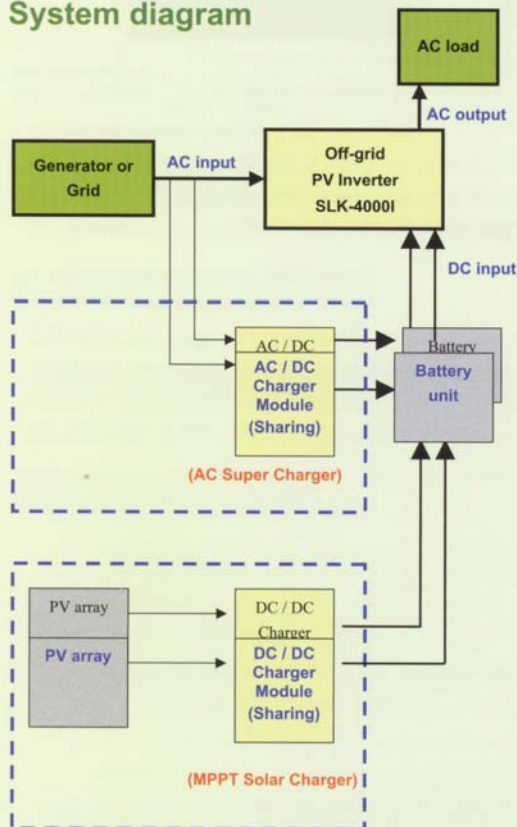
	12 units	15 units	18 units
<b>Input data</b>			
Max. DC power(Pdc,max)	52.8kw	66.0kw	79.2kw
Max. DC voltage	500V		
PV voltage range,MPPT	250V-500V		
Max.input current	12X25A	15X25A	18X25A
DC volate ripple	<10%		
Max.unmber of strings (parallel)	4	3	3
<b>Output data</b>			
Max.AC power (40C)	48kw	60kw	72kw
Nominal AC output	48kw	60kw	72kw
THD of AC current	<4%		
Nominal AC voltage	220Vac-240Vac		
Nominal ac frequency	50HZ/60HZ		
Power factor	>0.99		
Short circuit proofing	Current control		
Grid connection	AC terminal		
<b>Efficiency</b>			
Max. efficiency	96%	96%	96%
Euro efficiency	95.5%	95.5%	95.5%
<b>Protection rating</b>			
DIN EN 60529	IP65(SLK-series) IP44(SLK Tower)		
<b>Mechanical data</b>			
Width/height/depth(mm)	2000/1800/1500		
Weight	310Kg	360Kg	430Kg



## Solar King (Off-Grid Technology)

1. SLK-4000I designed in stand alone system for your operation.
2. Mini weight and size with more power output.

### System diagram



Model	SLK-4000I
<b>AC Output</b>	
Nominal output power	4000W
Nominal AC output voltage	208Vac / 240Vac
Maximum efficiency (TYP)	91 - 93%
AC output voltage range	(187~230Vac) / (216~264Vac)
Waveform	Sinusoidal
Operational frequency range	50 - 60Hz
Nominal output current	19.2A/16.7A
THD V (%)	<3%
Power Factor	0.8 to 1
Frequency Regulation	+/-0.1Hz
Power consumption when standby	< 7W
Power consumption with no load	< 15W
Dimension (mm) W x H x D	550 x 300 x 133 mm
Weight (kg)	< 25kg
Ambient temperature	-25°C to 55°C
Protection degree (DIN EN60529)	IP65 or IP43
<b>DC Input</b>	
Nominal input voltage	48Vdc
DC Input Voltage range	40Vdc ~70Vdc
Maximum DC Power at Rated Current	110A

# PV Inverter Accessories

## King Logger

### Features

- Color Graphic display
- Touch penal operation
- Real-time clock
- Automatic backup to prevent data loss
- RS232, RS485 and multi-interface
- RJ45 Ethernet socket
- Universal AC power input
- Wall mounted or standalone with frame supporter
- Alarm notification by SMS and MAIL
- CF card storage, user accessible
- Multiple language extended (English)
- Data logging data for more than 3 years if a 512Mb storage media is used



### Description

The King Logger for PV inverters. The name of the data logger is "King Logger". The naming "King" means powerful and friendly to operate the device. We intended to develop a product that users do not have to read the user manual for basic operation.

## Solar Charger SPEC.

### FEATURES

- > Optimal MPPT Tracking method.
- > Over voltage\current protection.
- > High converting efficiency>95%.
- > Auto sensing battery voltage.
- > The solar charger parallel operated in good current sharing performance.



Model	MPPT Solar charger
Battery unit (12V/per)	4x
Rated Voltage	48Vdc
Rated charge current	15Amp
Input voltage range	50Vdc~110Vdc
Overload protection	16A
Over charge protection	57.5V
Over charge recovery	53.5V
Operation temperature	-20° C~40° C
Storage Temperature	-25° C ~ 70° C
Ambient Operation	5000 meters max. elevation, 0-95% humidity non-condensing
Audible Noise	<40dBA (1 meter from surface)
Storage Condition	16,000 meters max.
Protection class	IP21
Terminal size (single wire)	12AWG
<b>Mechanical specification</b>	
Dimension	212.4 x 139.6 x 61.6 mm
Weight	1.45kg

# PV Inverter Accessories

## Solar GSM/ GPRS module



### Product Features

All models in the solar GSM /GPRS series have the following features:

- Quad-band 900/1800, 850/1900 MHz GSM/GPRS/EDGE
- GPRS Class 12
- Versatile operating modes, including Real COM, RFC2217, TCP Server, TCP Client, UDP, Ethernet Modem, and SMS Tunnel
- Port buffering function to prevent loss of serial data when communication is disrupted
- Port speeds of up to 921.6 Kbps
- Any Baud rate feature for easy configuration of custom baud rates
- Redundant DC power inputs
- LED indicators for status and signal level
- 2 digital inputs and 1 relay output

### Description

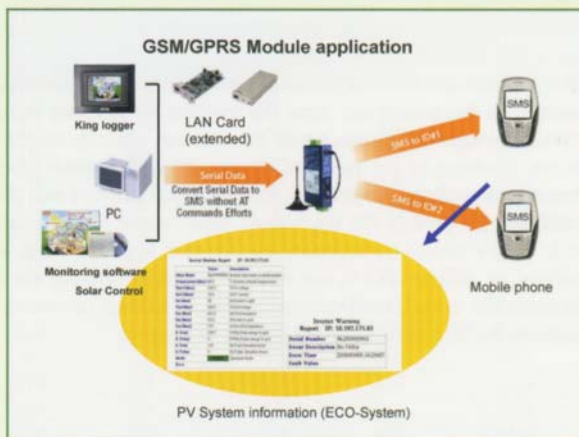
The Module industrial RS-232 or RS-232/422/485 GSM/GPRS/EDGE IP modems are designed to transmit data and short messages (SMS) over GSM/GPRS/EDGE cellular networks. The Real COM operation mode automatically generates a virtual COM port to match serial ports supported by the module, allowing you to communicate with remote serial devices. The module's CPU comes pre-installed with the TCP/IP protocol suite to transmit data back and forth between the serial device and cellular TCP/IP network. It also comes with a built-in relay output that can be configured to indicate the priority of events when notifying or warning engineers in the field and the two digital inputs allow you to connect basic I/O devices, such as sensors, to the cellular network. The module can be mounted on a DIN-rail, and the 12 to 48 VDC power input has 2 KV EFT/Surge protection to allow the use of different types of field power source. The serial ports are also protected by 15 KV ESD line protection to keep your system safe from unexpected electrical discharges.

### SMS Mode

A major benefit of GSM technology is that it supports short messages (SMS) for easy communication over the mobile network. SMS Mode allows you to expand your applications and reduce cost. For example, SMS Mode can be used to update the message on a highway display panel, place refill orders for vending machines, handle maintenance for remote rental equipment, or even help create an SMS alarm by directly transforming text, binary, or Unicode data from a legacy device to short messages. SMS Mode is particularly suitable for devices that communicate infrequently, or lack access to the local network. SMS Mode converts ASCII, binary code, and UCS2 data to short messages transparently (both back and forth). In addition, the caller ID (phone number) identification can be used to block messages sent from uncertified users, broadcast messages, and unwanted SMS advertisements.

### SMS Mode has the following features:

1. Transparently converts serial data to short message, and vice versa.
2. Text, binary, and Unicode formats are supported.
3. Verification of Incoming Caller ID calls is implemented to block uncertified users.



# PV Inverter Accessories

## LAN Card Module



LAN CARD



LAN CARD (BOX)

### Features

#### ■ E-Mail

It adopts SMTP (Simple Mail Transfer Protocol) to complete the e-mail function. By way of this, user can deliberately send out the e-mail with authentication or not, when the certain of the inverter events happened.

#### ■ Executing command file

Define your own actions for each inverter event. The Solar Control -for-LAN Card will perform actions according to your definitions. The actions include saving files, broadcast, etc...

#### ■ inverter Information

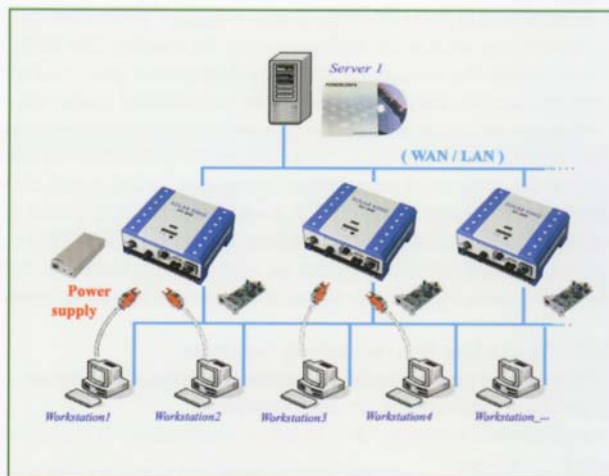
The LAN Card allows you to view the information and status of the inverters locally or remotely. An event log file which contains all inverters -related events, such as power failures, shutdowns, power recoveries, etc. A data log file which is collecting electrical parameters, inclusive of input voltage, output voltage, output frequency, temperature, etc...

### Description

With these Inverters, the LAN Card (box) provides you with reliable and easy-to-use network management functions.

LAN Card uses the HTTP (Hypertext Transfer Protocol) to monitor the inverters. By this way, it can drive the inverters become the standard network management device. Hence the user can remotely control and get the condition of the inverters via general web browser (such as Internet Explorer, Netscape Browser...etc) as easily as surfing a web site.

In addition, we provide the full-fledged Solar control -for-LAN Card to satisfy the PV system management requirement, like "one PC to many inverters" or "different PCs to one inverter". (figure 1) Certainly the basic functions like e-mail, notification, log file, executing command file, shutdown the OS, reset the inverter...etc, we all support.



# PV Inverter Accessories

## RS485 MODBUS/GENERAL Card

### Features

All models in the RS485 series have the following features:

- Transmission mode full duplex and half duplex supported.
- RJ11 interface friendly connected.
- Excellent transmission quality 9600bps.
- Flexible registered setting.

### Description

■ This card is compatible with various models of Inverter  
RS485 MODBUS card is an inverter-monitoring interface. It can be applied to various models of inverters, transmitting data with up to 9600 bits per second.

■ It is compact and easy for installation

RS485 MODBUS card is compact and easy for installation into the inverters. The embedded RS485 connector supports 2 sets of RS485 transfer channel for serial connection of inverters. Or it can connect the inverter directly to PC for inverter performance monitoring.



### PCM RS485 MODBUS card connected

When wiring RS485 MODBUS card from inverter to inverter, we connect the RS485 pins of the same assignment (signal) together. That is, we connect the Receive Pin to Receive Pin, and Transmit Pin to Transmit Pin.

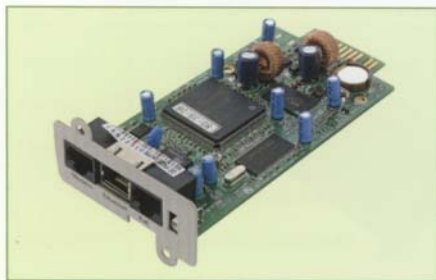
However, when wiring RS485 MODBUS card from Inverter to Converter, we connect the RS485 pins of the opposite assignment (signal) together. That is, we connect the Receive Pin to Transmit Pin, and Transmit Pin to Receive Pin.

### Specification

Model		RS485 MODBUS Card
Output	Transmission mode & Baud Rate	full duplex or half duplex; 9600 bps, compatible with all inverters
	Golden Finger	1x4 pin golden edge interface for 2 sets of RS485 transfer: Data Transfer Mode: RS485, full duplex or half Data Transfer Rate: 9600 bps Configuration compatibility: Compatible with all inverters
	Cables for connection	2 x twisted-pair shielded cables for full duplex RS485; 1 x twisted-pair shielded cables for half duplex RS485; Max. applicable length from card to card or device : 1200M(4000ft) (The maximum length can be applicable only under very low EMC and with proper cable
Physical	Net Weight Kg (lbs)	55g
	Dimension (mm) WxDxH	68 x 42 x 132 mm
Interface (Free software)	Connector	1x8 pin connector for 2 sets of RS485 transfer configuration: Set TB1 Pin assignment: T+, T-, R+, R- Set TB2 Pin assignment: T+, T-, R+, R-
Environment	Ambient Operation	Environment Ambient Operation 3,500 meters max. elevation, 0-95% humidity non-condensing, -25-55° C
	Audible Noise	<30dBA (1 meter from surface)

# PV Inverter Accessories

## SNMP/WEB Card Module



- Network interface  
UTP Fast Ethernet 10/100 auto-sense.
- Real Time clock  
Time can be adjusted by SMTP.
- E-Mail

It adopts SMTP (Simple Mail Transfer Protocol) to complete the e-mail function. By way of this, user can deliberately send out the e-mail with authentication or not, when the certain of the inverter events happened.

- Executing command file

Define your own actions for each inverter event. The SNMP Card will perform actions according to your definitions. The actions include saving files, broadcast, etc...

- inverter Information

The SNMP Card allows you to view the information and status of the inverters locally or remotely. An event log file which contains all inverters - related events, such as power failures, shutdowns, power recoveries, etc. A data log file which is collecting electrical parameters, inclusive of input voltage, output voltage, output frequency, temperature, etc...

- OnEvent

OnEvent is a new notification technology, which can exchange multimedia message over LAN, regardless of operation system. When a event occurs, a computer with OnEvent software installed.

### Description

With these Inverters, the SNMP Card (box) provides you with reliable and easy-to-use network management functions.

SNMP Card uses the HTTP (Hypertext Transfer Protocol) to monitor the inverters. By this way, it can drive the inverters become the standard network management device. Hence the user can remotely control and get the condition of the inverters via general web browser (such as Internet Explorer, Netscape Browser...etc) as easily as surfing a web site.

In addition, we provide the full-fledged Solar control -for-SNMP Card to satisfy the PV system management requirement, like "one PC to many inverters" or "different PCs to one inverter" (figure 3) Certainly the basic functions like e-mail, notification, log file, executing command file, reset the inverter...etc, we all support.

### Features

The SNMP/WEB Card provides you with a very easy to use network management function. It supports both SNMP and HTTP. The SNMP (Simple Network Management Protocol) will create a web site for your PV inverter. You can view the information of the PV inverter and Control the PV inverter remotely as easily as surfing on a web site.

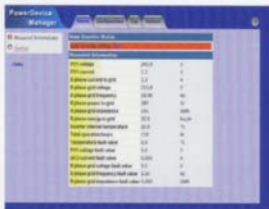


Figure1. PV inverter information display on the web site.

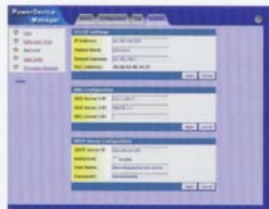
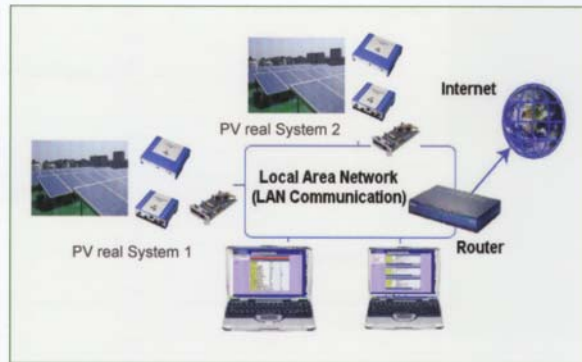


Figure2. PV inverter SMTP Setting.



Event notification



# PV Inverter Accessories

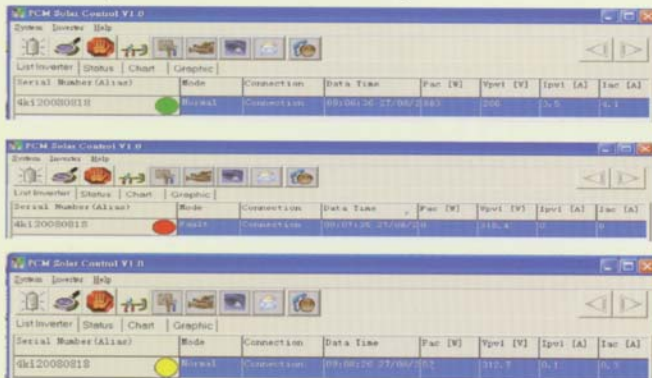
## Solar Control monitoring software

If you are seeking a superior protection to saving valuable documents and applications during PV System situation Solar Control is the iron clad program that can be trusted. With easy-to-use features, provides excellent management for any PC platforms System.

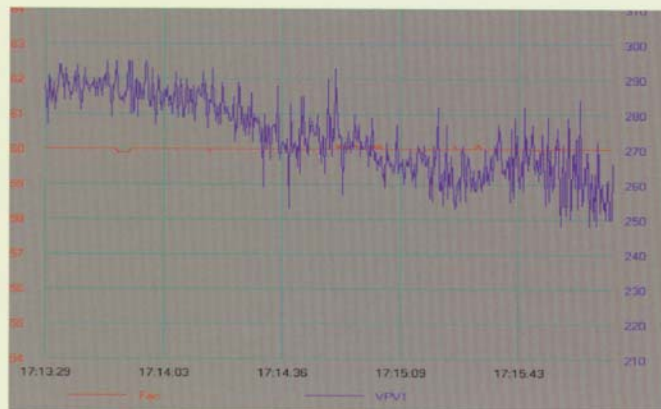
PV System is an intelligent energy monitoring software that detects the status of PV system through communication port. When System failure occurs, the software senses the status and will immediately broadcast warning messages to users.

### SOLAR CONTROL

(1) Showing the PV inverter status clearly!

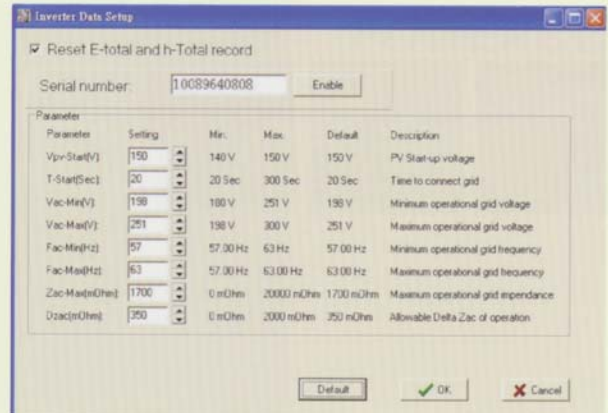


(2) Real-time Parameter could be observed!



Monitoring data and window

(3) All parameters could be adjusted friendly!  
(To match the local power quality "password" )!







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