

# Renewable Energy: Photovoltaic Modules



## Mechanical Characteristics

Dimension	1956 x 992 x 40 mm.
Weight	24.5 kg.
Dimension tolerance	± 1 mm.
Junction Box	Degree of protection: IP67 and compatibility with 2.5 - 4.0 mm cross section cable size.
Connector	MC4 Compatible
Diode	Silicon or Schottky By - pass diode for every 24 cells connection
Frame	Anodized Aluminum.
Construction structure	Front: High light transmission tempered glass with 3.20 mm thickness. Back: Weather proof back sheet material. Laminated Material: EVA.

## Qualification and testing

ISO 9001, ISO 14001, OHSAS 18001, ISO 50001 for qualify management system.  
IEC 61215 : Crystalline silicon terrestrial PV modules— Design qualification and type approval.  
IEC 61730 : PV module safety qualification. To ensure a safety for users and installing operator of our products.  
TIS 1843 : Thailand Industrial Standard equivalents to IEC 61215.  
TIS 2580 : Thailand Industrial Standard equivalents to IEC 61730.



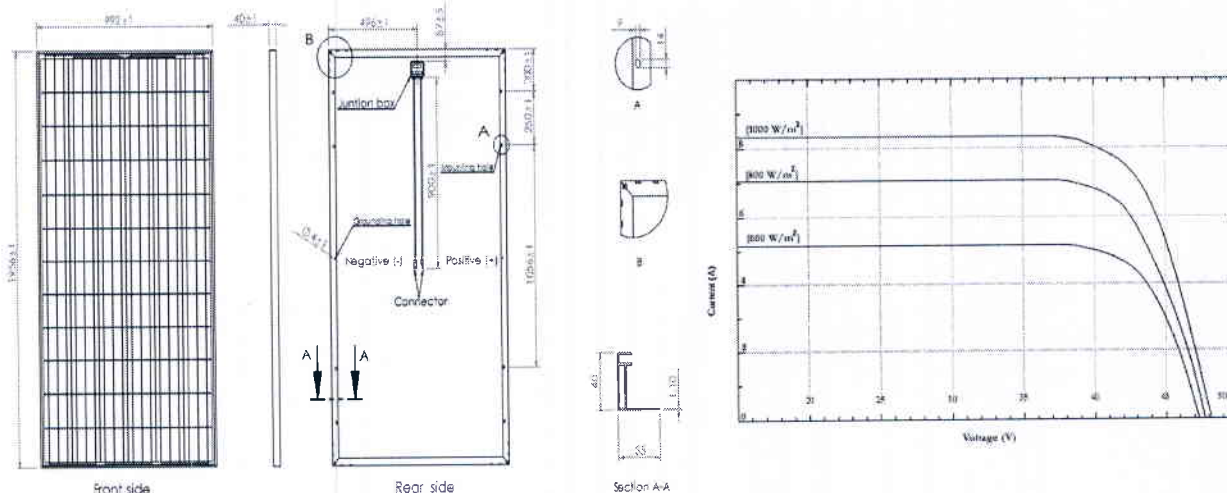
## Module drawing diagram

TIS-1843-2553  
TIS-2580-2555

## IV - curves

### Irradiance

1,000 W/m<sup>2</sup>, 800 W/m<sup>2</sup>, and 600 W/m<sup>2</sup>



These data represent the performance of typical modules as measured at their out put terminals, and do not include the effect of such additional equipment as diodes or cables. The data are based on measurements made in accordance with ASTM E1036-85 corrected to SRC (Standard Reporting Conditions, also known as STC or Standard Test Conditions), which are:

- Illumination of 1kW/m<sup>2</sup> (1sun) at spectral distribution of AM1.5 (ASTME892-87 global spectral irradiance);
- Cell temperature of 25°C.

**CONTACT US: Ekarat Engineering Public Company Limited**

**Solar Module Factory / Maintenance & Service Center**

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Specifications subject to technical changes  
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Rev. A



# Renewable Energy: Photovoltaic Modules

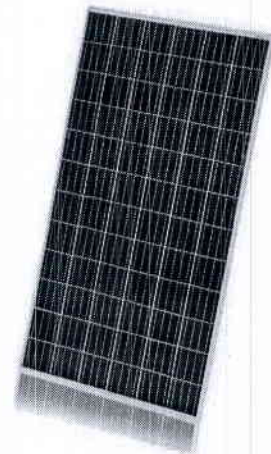


## 330 Watts

### Surpass Performance Multi (Poly) - crystalline PV module

Ekarat Engineering's 330 Watts PV module is produced under a stage of the art automatic assembly machines to ensure a consistency and reliability of production quality. The 330 Watts PV module is commonly used for wide range applications such as commercial building, solar power plant, telecommunication station, particularly with grid-connected systems.

High efficiency module 17.18%, is a result of solar cell's superior power output, which has been developed by our own solar cell factory. Moreover, other component materials are also selected to comply with international standards such as IEC. These create a customer's confidence ensured with a manufacturing based 25 years limited warranty\*.



- Low iron tempered glass allows a high light transmission rate with a great robustness.
- EVA encapsulate sheet, back-sheet, and clear anodized aluminum frame are technically equipped to protect the module against all weather condition.
- Junction box with IP67 to ensure water proof and prolong lifetime operation.
- Special cable with connectors is offered as option for easy interconnection in grid-connected systems as well as stand-alone systems.
- Bypass diode included in promptly provided junction box is to prevent the power dropped by partial shading.
- Square Cell 156×156mm (6 inches)

#### \*Warranty

- 25 year transferrable power output warranty: 10 years / 90%, 25 years / 80%
- Linear performance warranty
- 10 year material and workmanship warranty

#### Electrical Characteristics

Model No.	EE2330
Maximum power (Pmax)	330 W
Power tolerance	0,+3%
No. of connected cells	72
Voltage of Pmax (Vmp)	38.16 V
Current at Pmax (Imp)	8.65 A
Short - Circuit current (Isc)	9.25 A
Open - Circuit voltage (Voc)	46.94 V
Temperature Coefficient of Voc	-0.33 % / °C
Temperature Coefficient of Isc	+0.03 % / °C
Temperature Coefficient of power	-0.41 % / °C
Maximum series fuse rating	15 A
Maximum voltage system	1,000 V
Operating Temperature	-40°C ~ +85°C

#### CONTACT US: Ekarat Engineering Public Company Limited

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e-mail salesolar2016@gmail.com Web site <http://ekarat-transformer.com>

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Rev. A



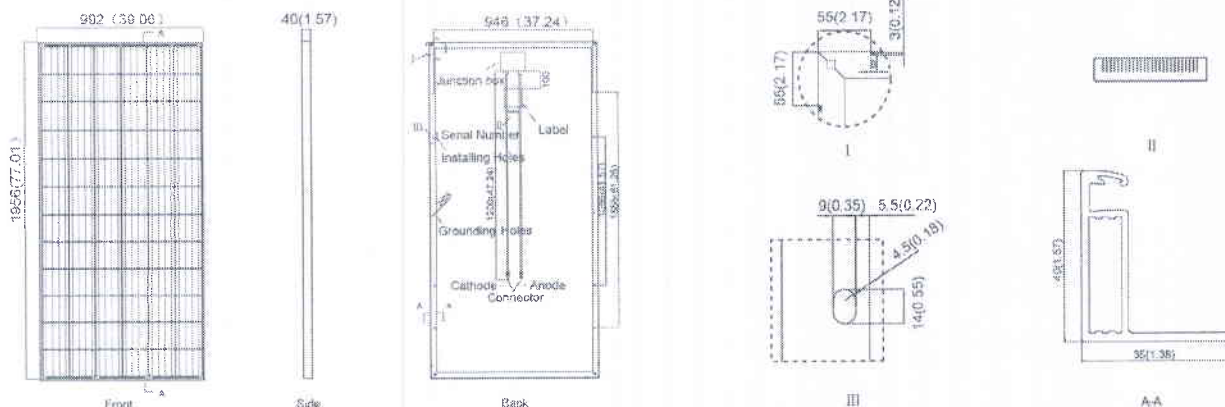
## Electrical Characteristics

Module Type	STP6-300/72	STP6-305/72	STP6-310/72	STP6-320/72	STP6-325/72	STP6-330/72
	STC	STC	STC	STC	STC	STC
Maximum Power (P <sub>max</sub> )	300Wp	305Wp	310Wp	320Wp	325Wp	330Wp
Maximum Power Voltage (V <sub>mp</sub> )	38.10V	38.49V	38.91V	37.70V	38.02V	38.30V
Maximum Power Current (I <sub>mp</sub> )	8.32A	8.36A	8.40A	8.49A	8.55A	8.60A
Open-circuit Voltage (V <sub>oc</sub> )	45.25V	45.52V	45.69V	48.08V	46.25V	46.42V
Short-circuit Current (I <sub>sc</sub> )	8.98A	9.04A	9.09A	9.19A	9.24A	9.29A
Module Efficiency STC (%)	15.48%	15.72%	15.98%	16.50%	16.75%	17.01%
Operating Temperature(°C)	-40°C~+85°C			Temperature coefficients of P <sub>max</sub>		-0.41%/°C
Maximum system voltage	1000VDC (IEC)			Temperature coefficients of V <sub>oc</sub>		-0.33%/°C
Maximum series fuse rating	15A			Temperature coefficients of I <sub>sc</sub>		+0.03%/°C
Power tolerance	(0, +5)			Nominal module operating temperature (NMOT)		45±2 °C

STC: Irradiance 1000W/m<sup>2</sup> Cell Temperature 25°C AM=1.5

## Engineering Drawings

\*All dimensions in mm(inch)



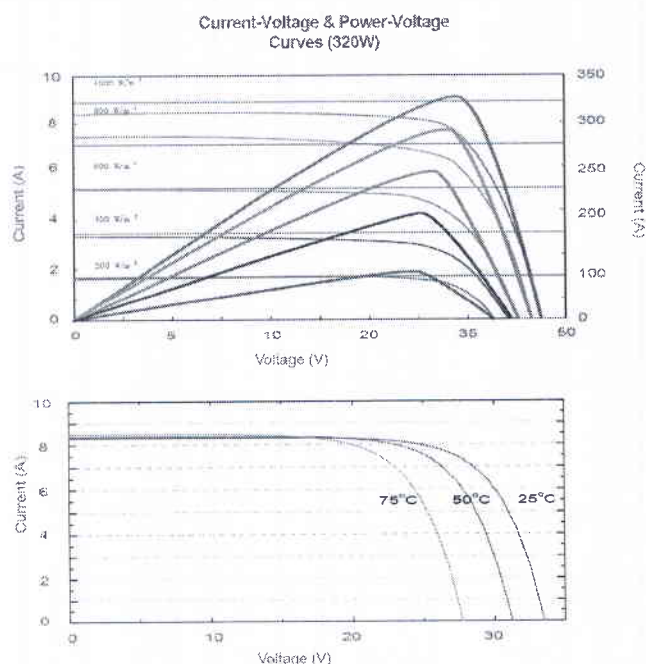
## Mechanical Characteristics

Cell Type	Poly-crystalline 156×156mm (6 inch)
No. of cells	72 (6×12)
Dimensions	1956×992×40mm (77.00×39.05×1.57 inch)
Weight	21.0 kg (46.3 lbs.)
Front Glass	3.2mm, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP67 Rated
Output Cables	4.0mm, Length: 1200mm
Connector	MC4 Compatible
Maximum Snow Load	550Kg/m <sup>2</sup>
Maximum Wind Load	200Km/h
Hailstone Impact Test	80Km/h for 25mm-ice ball

## Packaging Configuration

Container	20' GP	40' HQ
Pieces Per Pallet	26 / 22 / 16	26 / 4
Pallets Per Container	5 / 5 / 1	24 / 12
Pieces Per Container	256	672

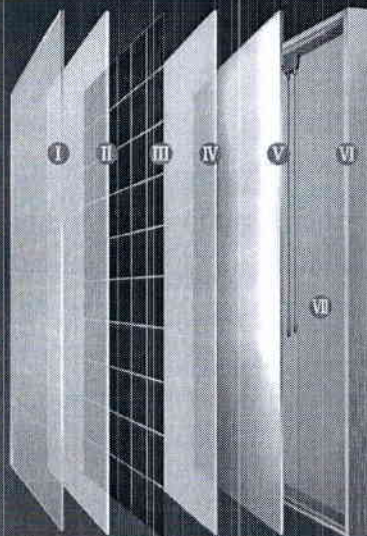
## Current-Voltage & Power-Voltage Curve





## STP6-XXX/72 Series

STP6-300W, 310W



- I GLASS
- II, IV EVA
- III CELL
- V BACKSHEET
- VI FRAME
- VII JUNCTION BOX

Polycrystalline  
photovoltaic  
Module



Four-Busbar Cell

### I GLASS

- High light transmission giving more electricity
- Excellent mechanical loading performance (5400Pascal)
- SPF-UL certified

### II IV EVA

- High light transmission assuring better power performance
- High GEL and peeling strength guarantying strong encapsulation
- Good ultraviolet aging resistance
- TUV/UL certified

### III CELL

- Excellent efficiency and long term reliability
- Good performance under high temperature and low irradiance conditions
- 100% In-Line Electroluminescence(EL) tested
- Positive tolerance for each panel
- TUV/UL

### V BACKSHEET

- TEDLAR based encapsulation and protection
- Good aging resistance guarantying strong durability performance
- Excellent adhesion and ultraviolet stability
- TUV/UL certified

### VI FRAME

- Anodized/Electrophoretic aluminum means durable protection from environment
- Unique designed profile ensuring strong mechanical loading performance
- Silver/Black color available

### VII JUNCTION BOX

- Reliable by-pass diodes assuring good product protection
- Locking connector working compatible worldwide
- Excellent heat emission performance
- IP65 or IP67 protection
- TUV/UL certified

#### CERTIFICATES



#### INSURANCE



#### LINEAR PERFORMANCE WARRANTY



**12**  
YEARS

Guarantee on product  
material and workmanship

**25**  
YEARS

Linear power  
output warranty



## ELECTRICAL PARAMETERS

Performance at STC (Power Tolerance 0 ~ +3%)

Maximum Power(Pmax/W)	325	330	335	340
Operating Voltage(Vmpp/V)	37.4	37.7	38.0	38.3
Operating Current(Imp/A)	8.70	8.76	8.82	8.89
Open-Circuit Voltage(Voc/V)	45.7	45.9	46.2	46.4
Short-Circuit Current(Isc/A)	9.22	9.27	9.34	9.40
Module Efficiency $\eta$ (%)	16.7	17.0	17.2	17.5

Performance at NMOT

Maximum Power(Pmax/W)	242.3	245.8	249.5	253.3
Operating Voltage(Vmpp/V)	34.7	35.0	35.2	35.4
Operating Current(Imp/A)	6.98	7.03	7.09	7.15
Open-Circuit Voltage(Voc/V)	42.5	42.6	42.9	43.1
Short-Circuit Current(Isc/A)	7.46	7.50	7.55	7.60

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5

NMOT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s

## MECHANICAL SPECIFICATION

Cell Type	Poly-Crystalline Silicon (5Busbar)
Cell Dimensions	156.75*156.75mm(6inches)
Cell Arrangement	72(6*12)
Weight	22kg(48.5lbs)
Module Dimensions	1960*992*35mm (77.17*39.06*1.38inches)
Cable Length	1200mm(47.24inches)
Cable Cross Section Size	4mm <sup>2</sup> (0.006inches <sup>2</sup> )
Front Glass	3.2mm High Transmission, Tempered Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	30pcs/Pallet, 720pcs/40hq
Packing Configuration (2)	30pcs+5pcs/Pallet, 780pcs/40hq
Frame	Anodized Aluminium Alloy
Junction Box	IP68

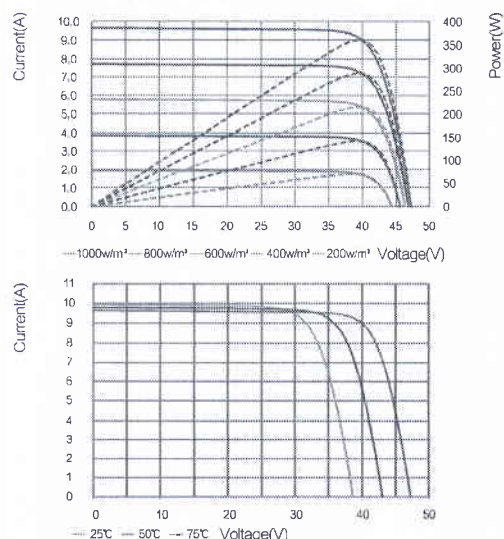
## OPERATING CONDITIONS

Maximum System Voltage	1000V/DC(IEC)/1500V/DC(IEC)
Operating Temp	-40°C~+85°C
Maximum Series Fuse	20A
Static Loading	5400Pa
Conductivity at Ground	$\leq 0.1\Omega$
Safety Class	II
Resistance	$\geq 100M\Omega$
Connector	MC4 Compatible

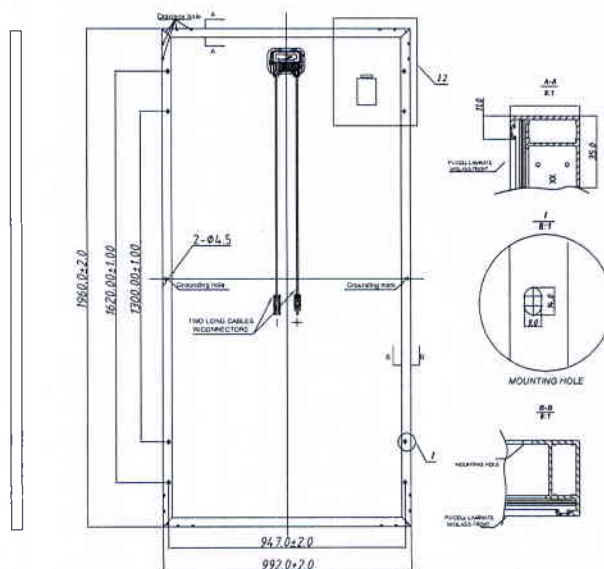
## TEMPERATURE COEFFICIENT

Temperature Coefficient Pmax	-0.40%/°C
Temperature Coefficient Voc	-0.31%/°C
Temperature Coefficient Isc	+0.06%/°C
NMOT	43 $\pm$ 2°C

## I-V CURVE



## TECHNICAL DRAWINGS

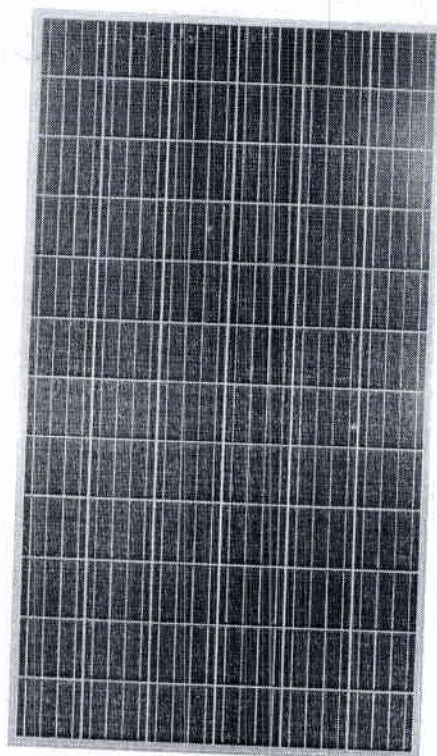




# SOLARTRON

PUBLIC COMPANY LIMITED

## 300W/305W/310W/315W/320W/325W Multicrystalline Silicon Solar Module



**Module Efficiency is up to 16%**, minimizing installation costs and maximizing the output of the system.

**992.7x1972.7x40mm** is suitable for power plant system.

**Higher Durability**, Certified to withstand 2400 Pa wind load and 5400 Pa snow load.

**Higher Output**, Improved ribbon layout and cable length, Enhanced fill factor, Increased power output up to 1% by reducing power loss.

**Lower Junction Box Temperature**, Separated junction box design, Better heat dissipation, Lower diode operating temperature and life time.

### Warranty

10 years Product Workmanship Warranty

25 years Linear Power Output Warranty:

Output power shall not be less than 97.5% in the first year

Loss shall not exceed 0.7% per year from year 2<sup>nd</sup> to 25<sup>th</sup>

### Standards and Certification

ISO 9001:2015, ISO 14001:2015, TIS 18001:2554 and OHSAS 18001:2007 certified factories

CE Mark (EMC-Directive 2004/108/EC) certificate of European Conformity  
RoHS certified of directive on the restriction of the use of certain hazardous substances

TIS 1843-2553 (IEC61215) Crystalline silicon terrestrial photovoltaic modules, Thai Industrial Standards

TIS 2580-2555 (IEC61730) Photovoltaic module safety qualification, Thai Industrial Standards

TÜV Rheinland IEC61215, IEC61730

JETPvm certification (IEC61215, IEC61730)

MCS - PV0222

UL 1703 by TÜV Rheinland



### Mechanical Characteristics

**Solar Cell :** 72 Cells, 156x156 multicrystalline

**Dimension :** 992.7 x 1972.7 x 40mm

**Weight :** 22 kg.

**Construction :** Front: High Transmission 3.2 mm. tempered glass;  
Rear: White PET; Encapsulant: EVA

**Frame :** Anodized Aluminium Alloy

**Junction box :** IP67 Certified Junction Box

**Diodes :** 3 Schottky bypass diodes

**Connector :** MC4 compatible

**Output cables :** 4.0 mm<sup>2</sup> 12 AWG cable.  
Cable length 315 mm

**Fire rating Class :** C

SOLARTRON PUBLIC COMPANY LIMITED

SOLARTRON FACTORY

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E-mail : support@solartron.co.th www.solartron.co.th

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Nakonratchasima 30130, Thailand.

Tel : +66 44 365 651, +66 44 365 652

Fax : +66 44 365 654





# SOLARTRON

PUBLIC COMPANY LIMITED

## Electrical Characteristics

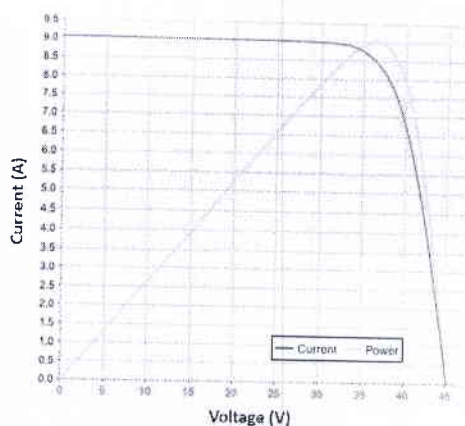
STC Performance	SP300	SP305	SP310	SP315	SP320	SP325
Maximum Power (Pmax)	300	305	310	315	320	325
Open Circuit Voltage, Voc (V)	44.81	44.99	45.03	45.08	45.29	45.51
Short Circuit Current, Isc (A)	8.94	8.96	9.05	9.14	9.23	9.32
Maximum Power Voltage, Vmp (V)	36.09	36.36	36.71	37.05	37.41	37.76
Maximum Power Current, Imp (A)	8.32	8.39	8.44	8.50	8.55	8.61
Module Efficiency (%)	15.32	15.57	15.83	16.08	16.34	16.60
Maximum Power Tolerance (W)				±3		
Maximum System Voltage, IEC (V)				1000		
Maximum System Voltage, UL (V)				600		
Maximum Series Fuse Rating, (Amp)				15		
Temperature coefficients of Pmax				-0.42 % / °C		
Temperature coefficients of Voc				-0.31 % / °C		
Temperature coefficients of Isc				0.04 % / °C		
Nominal operating cell temperature (NOCT)				45.0 °C (±2 °C)		

- ❖ Standard Test Conditions of Irradiance of 1,000 W/m<sup>2</sup>, Spectrum 1.5 AM, Module Temperature 25 °C
- ❖ Weaklight Performance at 200 W/m<sup>2</sup>: Efficiency of module shall not be less than 95.5% of STC efficiency

NOCT Performance	SP300	SP305	SP310	SP315	SP320	SP325
Rated Power, Pm (W)	222	226	230	233	237	241
Open Circuit Voltage, Voc (V)	43.14	43.31	43.36	43.40	43.60	43.81
Short Circuit Current, Isc (A)	7.23	7.25	7.34	7.39	7.46	7.54
Maximum Power Voltage, Vmp (V)	33.67	33.92	34.28	34.57	34.90	35.23
Maximum Power Current, Imp (A)	6.61	6.67	6.70	6.75	6.79	6.84

- ❖ NOCT: Irradiance of 800 W/m<sup>2</sup>, Ambient Temperature 20 °C, Wind Speed 1m/s

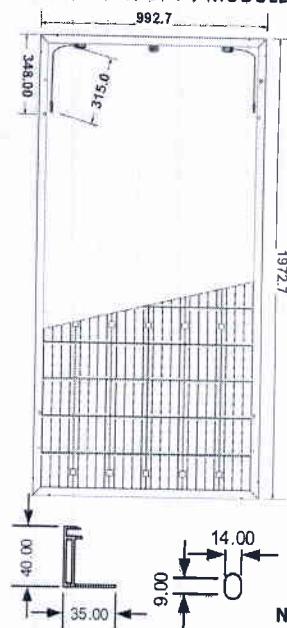
## I-V CURVES OF PV MODULE



## Packaging Configuration

Modules per box	25 pieces
Container 20' HC	250 pieces
Container 40' HC	600 pieces

## DIMENSION OF PV MODULE



Note : mm

# PIPRO Poly

## TP672P / TP672P(H)

### 325 / 330 / 335 / 340W

Polycrystalline Solar Module  
72-Cell Series

#### KEY FEATURES



##### Maximize limited space

Maximum power output 340W



##### Excellent Anti-PID performance

2 times of industry standard Anti-PID test by TUV SUD



##### Highly reliable due to stringent quality control

In-house testing goes well beyond certification requirements



##### Certified to withstand the most challenging environmental conditions

2400 Pa wind load/5400 Pa snow load/25 mm hail stones at 82 km/h



##### IP68 junction box

The highest waterproof level



##### Lower temperature coefficients

Enhance power generation

#### ABOUT TALESUN SOLAR

TALESUN Solar is one of the world's largest integrated clean energy providers with 4 GW cell and 5 GW module production capacity globally. Its standard and high-efficiency product offerings are among the most powerful and cost-effective in the industry. Talesun Solar is committed to provide customers with customized, systematized and trustworthy turnkey solutions.

#### SYSTEM & PRODUCT CERTIFICATES

- IEC 61215 / IEC 61730 / UL 1703
- ISO 9001 : 2015 Quality Management System
- ISO 14001 : 2015 Environment Mangement System
- ISO 45001 : 2018 Occupational Health and Safety Management Systems



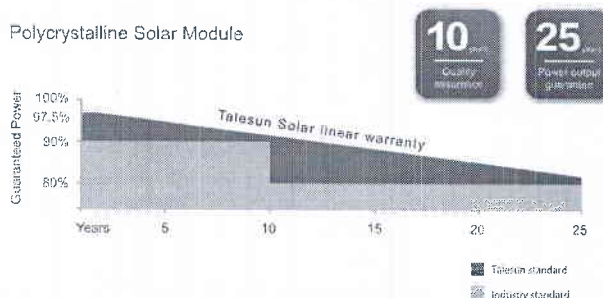
#### QUALITY WARRANTY

TALESUN guarantees that defects will not appear in materials and workmanship defined by IEC61215, IEC61730 or UL1703 under normal installation, use and maintenance as specified in Talesun' s installation manual for 10 years from the warranty starting date.



#### PERFORMANCE WARRANTY

Polycrystalline Solar Module





## ELECTRICAL PARAMETERS

Performance at STC (Power Tolerance 0 - +3%)

Maximum Power(Pmax/W)	325	330	335	340
Operating Voltage(Vmpp/V)	37.4	37.7	38.0	38.3
Operating Current(Imp/A)	8.70	8.76	8.82	8.89
Open-Circuit Voltage(Voc/V)	45.7	45.9	46.2	46.4
Short-Circuit Current(Isc/A)	9.22	9.27	9.34	9.40
Module Efficiency $\eta$ (%)	16.7	17.0	17.2	17.5

Performance at NMOT

Maximum Power(Pmax/W)	242.3	245.8	249.5	253.3
Operating Voltage(Vmpp/V)	34.7	35.0	35.2	35.4
Operating Current(Imp/A)	6.98	7.03	7.09	7.15
Open-Circuit Voltage(Voc/V)	42.5	42.6	42.9	43.1
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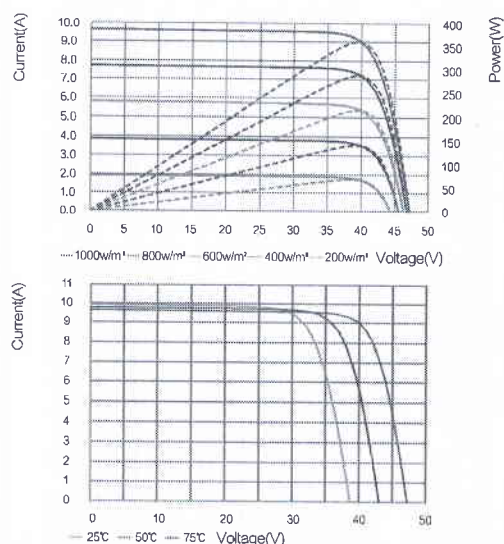
STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5

NMOT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s

## MECHANICAL SPECIFICATION

Cell Type	Poly-Crystalline Silicon (5Busbar)
Cell Dimensions	156.75*156.75mm(6inches)
Cell Arrangement	72(6*12)
Weight	22kg(48.5lbs)
Module Dimensions	1960*992*35mm (77.17*39.06*1.38inches)
Cable Length	1200mm(47.24inches)
Cable Cross Section Size	4mm <sup>2</sup> (0.006inches <sup>2</sup> )
Front Glass	3.2mm High Transmission, Tempered Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	30pcs/Pallet, 720pcs/40hq
Packing Configuration (2)	30pcs+5pcs/Pallet, 780pcs/40hq
Frame	Anodized Aluminium Alloy
Junction Box	IP68

## I-V CURVE



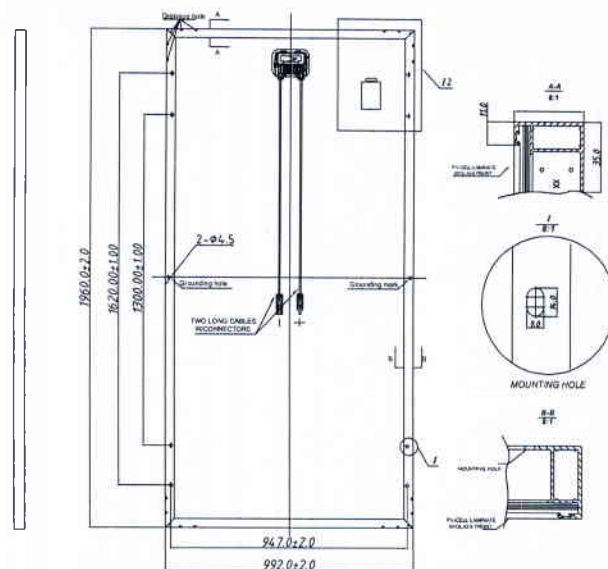
## OPERATING CONDITIONS

Maximum System Voltage	1000V/DC(IEC)/1500V/DC(IEC)
Operating Temp	-40°C~+85°C
Maximum Series Fuse	20A
Static Loading	5400Pa
Conductivity at Ground	$\leq 0.1\Omega$
Safety Class	II
Resistance	$\geq 100M\Omega$
Connector	MC4 Compatible

## TEMPERATURE COEFFICIENT

Temperature Coefficient Pmax	-0.40%/°C
Temperature Coefficient Voc	-0.31%/°C
Temperature Coefficient Isc	+0.06%/°C
NMOT	43±2°C

## TECHNICAL DRAWINGS





# PIPRO Poly

## TP672P / TP672P(H)

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Polycrystalline Solar Module  
72-Cell Series

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Maximum power output 340W



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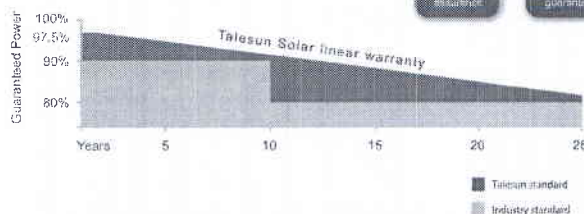
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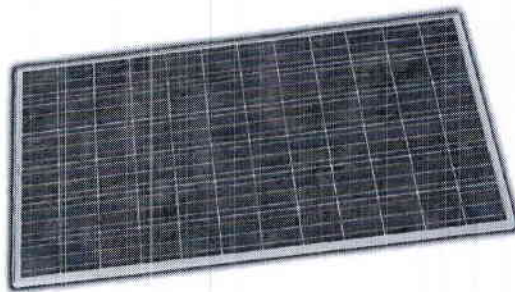
#### PERFORMANCE WARRANTY

Polycrystalline Solar Module





## Poly-Crystalline Solar PV Module 72 Cells Series (156MMX156MM)



### Performance

- Water resistant junction box IP67, IP68 with bypass diode and high strength polymer sheet on module's rear ensures module is sealed from moisture and mechanical damage
- AR coating low iron pattern tempered glass
- UV protection
- Unique drainage hole design and clear anodized aluminum frame
- PV cable with Connector type MC4

### Quality and Reliability

- Superior reliability with guaranteed 0~5W power output tolerance
- 15 years warranty on materials and workmanship,
- 25 years linear power warranty, 97% in the first year, 91% in 10<sup>th</sup> year, and ending with 80% in 25<sup>th</sup> year
- Cells are individually tested, characterized and modulated prior to interconnection
- Test and produce standard: IEC61215, IEC61730, ISO 9001:2008, ISO14001:2004, OHSAS18001:2007, TIS18001:2011, TIS1843:2553, TIS2580:2555

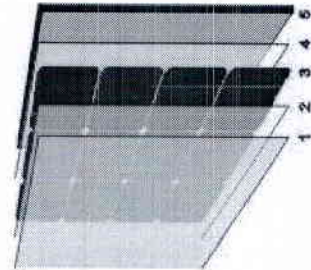
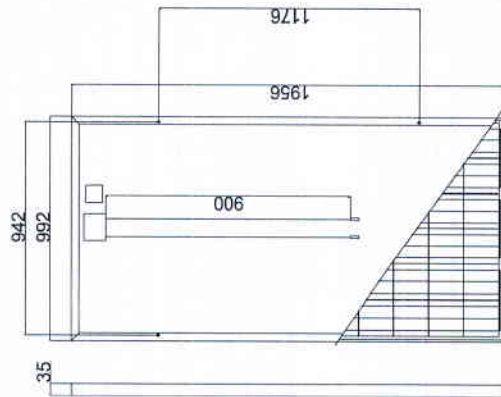
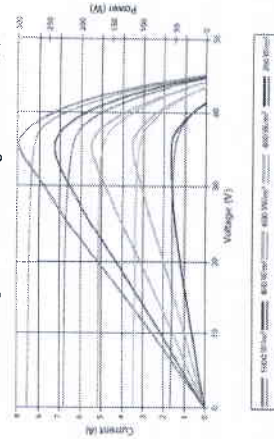
## Electrical Characteristics

Specification	F-300P	F-305P	F-310P	F-315P	F-320P	F-325P	F-330P
Rating power at STC (Wp)	300W	305W	310W	315W	320W	325W	330W
Open circuit voltage (Voc)	44.71V	45.01V	45.31V	45.61V	45.91V	46.21V	46.51V
Short circuit current (Isc)	8.88A	8.94A	9.00A	9.06A	9.12A	9.18A	9.24A
Rated voltage (V <sub>m</sub> )	36.19V	36.44V	36.70V	36.94V	37.18V	37.41V	37.63V
Rated current (I <sub>m</sub> )	8.29A	8.37A	8.45A	8.53A	8.61A	8.69A	8.77A
Module efficiency (%)	15.46%	15.72%	15.98%	16.23%	16.49%	16.75%	17.01%
Power tolerance	0 ~ 5 W						
Temperature coefficient of P <sub>m</sub>	-0.40%/K						
Temperature coefficient of I <sub>sc</sub>	+0.06%/K						
Temperature coefficient of V <sub>oc</sub>	-0.31%/K						
Maximum system voltage	DC600v (UL) / DC1000v (IEC)						
All technical data at STC: AM1.5; 1000W/m <sup>2</sup> ; 25°C							

## Mechanical Characteristics

Solar Cell	Polycrystalline 156 x 156 mm (6 inches)
No. of cells	72 (6X12)
Nominal Operating Cell Temperature (NOCT)	46 ± 2 °C
Operation temperature	From -40 to +85°C
Typical Application	24V DC
Max series fuse rating	15 A
Max wind resistance	2400Pa
Surface max. load capacity	5400Pa
Weight	21.4kg
Dimension	1956X992X35MM

Current-Voltage & Power-Voltage Curve (25±24)



1. Tempered glass
2. EVA
3. Cells
4. EVA
5. Back sheet



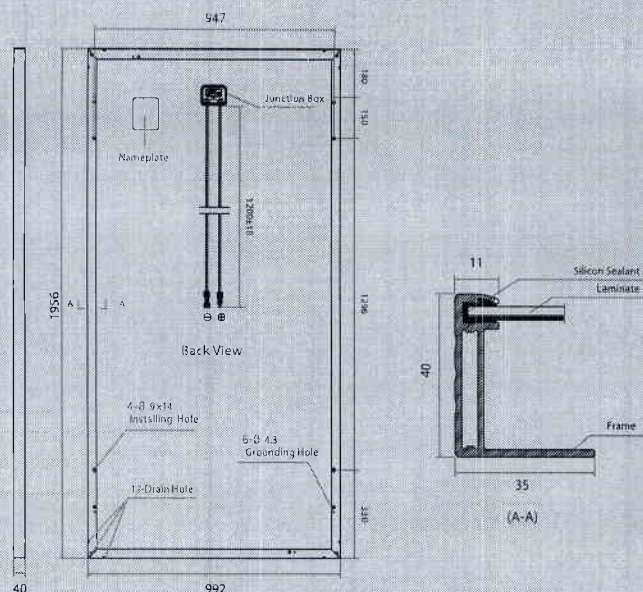
## MECHANICAL PARAMETERS

Cell(mm)	Poly Silicon 156x156
Weight(Kg)	22
Glass Thickness(mm)	3.2
Dimensions(LxWxH)(MM)	1956 X 992 X 40
Cable Cross Section Size(mm <sup>2</sup> )	4.0
No. of Cells and Connections	72 (6 x 12)
Junction Box	IP67, 3 diodes
Connector	MC4 Compatible
Packaging Conguration	27

poly 72 cell

SPPM-72 Poly

305 W - 325 W



## WORKING CONDITIONS

Maximum System Voltage	DC 1500V (IEC / UL)
Operating Temperatuer	-40 °C ~ +85 °C
Maximum Series Fuse	15A, 13A
Maximum Staic Load, Front(e.g., snow and wind)	5400Pa
Maximum Staic Load, Back(e.g., wind)	2400Pa
NOCT	45±2 °C
Application Class	A
Fire Performance Class	Class C / Type1

## ELECTRICAL PARAMETERS

TYPE	SPPM-72P-320W	SPPM-72P-325W	SPPM-72P-330W	SPPM-72P-335W	SPPM-72P-340W
Rated Maximum Power at STC(W)	320	325	330	320	325
Open Circuit Voltage(Voc/V)	45.50	45.60	45.80	46.00	46.20
Maximum Power Voltage(Vmp/V)	37.10	37.20	37.40	37.60	37.80
Short Circuit Current(Isc/A)	9.15	9.19	9.28	9.35	9.42
Maximum Power Current(Imp/A)	8.63	8.73	8.83	8.91	8.99
Module Efficiency(%)	16.50	16.70	17.00	17.20	17.50
Power Tolerance	-0 ~ +5W				
Temperature Cofcient of Isc( Isc)	+0.058% / °C				
Temperature Cofcient of Voc( Voc)	-0.330% / °C				
Temperature Cofcient of Pmax( Pmp)	-0.410% / °C				
STC	Irradiance 1000W/m <sup>2</sup> , Cell Temperature 25 °C, Air Mass 1.5				

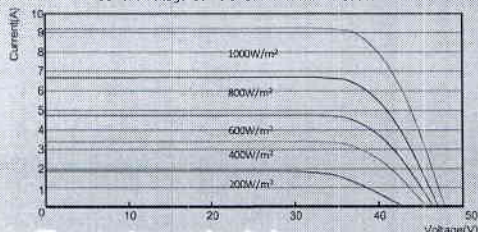
## NOCT

TYPE	SPPM-72P-320W	SPPM-72P-325W	SPPM-72P-330W	SPPM-72P-335W	SPPM-72P-340W
Max Power(Pmax)(W)	237.00	241.00	245.00	249.00	252.00
Open Circuit Voltage(Voc/V)	42.10	42.20	42.40	42.60	42.80
Max Power Voltage(Vmp/V)	34.30	34.40	34.60	34.80	35.00
Short Circuit Current(Isc/A)	7.39	7.42	7.49	7.55	7.60
Max Power Current(Imp/A)	6.92	7.00	7.08	7.14	7.21

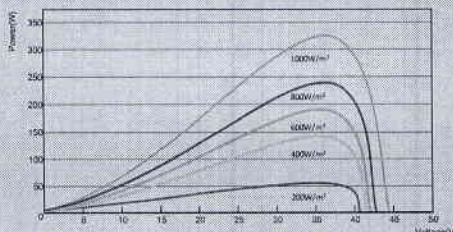
Condition: Under Normal Operating Cell Temperature, Irradiance of 800W/m<sup>2</sup>, Spectrum AM1.5, ambient temperature 20 °C, wind speed 1 m/s

## I-V CURVE

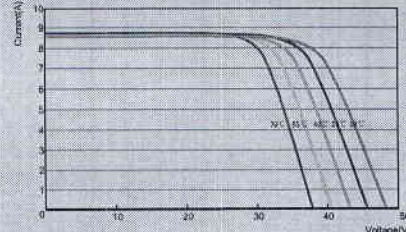
Current-Voltage Curve of SPPM-72P-X-4-330W



Power-Voltage of SPPM-72P-X-4-330W



Current-Voltage Curve of SPPM-72P-X-4-330W



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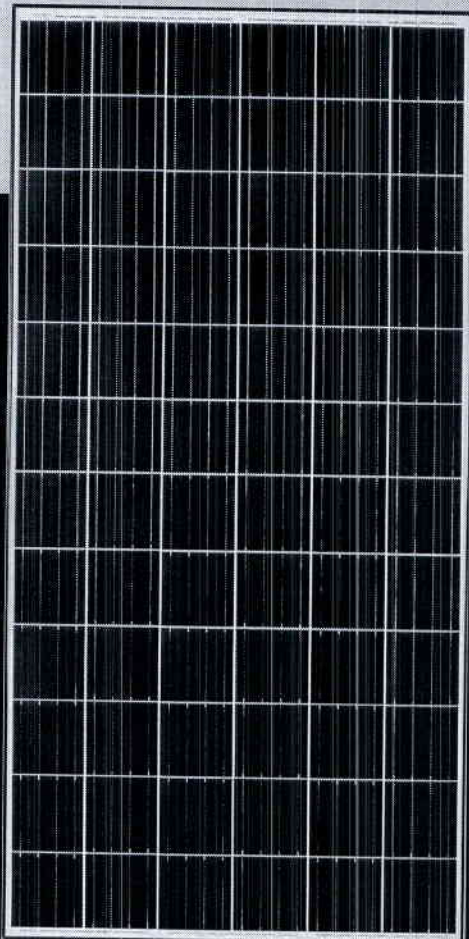




Solar PPM Company Limited

# SPPM-72 Poly

320 W - 340 W



## Superior Warranty

- 10-year product warranty



Tel. 064-595-9594

Tel. 064-559-4956

จำหน่ายโซลาร์เซลล์และอุปกรณ์



ฟรีเอ็นจ



soranadt0928



Bigfive5956@gmail.com

Bigfive5956@hotmail.com



www.BigFive.co.th

## Key Features



### Higher efficiency

มีประสิทธิภาพในการผลิตไฟฟ้าได้สูงกว่าถึง 17.50%  
ด้วยกำลังผลิตไฟฟ้า 320-340 วัตต์/แผง



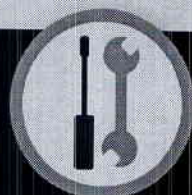
### Lightweight design

มีน้ำหนักเบาที่ 14 กิโลกรัม/แผง  
14 กิโลกรัม/ตารางเมตร



### 25 Years performance warranty

รับประกันกำลังการผลิตตลอดอายุ 25 ปี



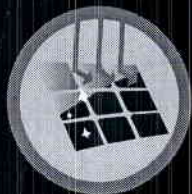
### Excellence warranty

ผลิตโดย Solar PPM สะท้อนรวดเร็วในการซ่อมแซม  
และ รับเปลี่ยนสินค้าตลอดระยะเวลาการรับประกัน



### 1500 VDC IEC compatibility

รองรับการเชื่อมต่อ  
แบบวงจรอนุกรมได้ถึง 1500 volt



### Anti-reflective & anti-soiling

กระจกที่ออกแบบให้ลดการสะท้อนแสงและ  
ลดการจับตัวของฝุ่น



### Positive power tolerance

ตั้งแต่ 0 ถึง + 5 watt และ มีใบรับประกันประสิทธิภาพ  
ด้วยการทดสอบ EL (FLASH Test) ทุกแผง 100 % ก่อนถึงมือคุณ

## Reliable Quality

- o Positive power tolerance: 0+5w
- o 100% EL double-inspection ensures modules are defects free
- o Modules binned by current to improve system performance
- o Potential Induced Degradation (PID) Resistant
- o 1st year : 97.5% performance guarantee
- o 0.7% performance degradation/year afterward

## Comprehensive Certificate

