Together we can make a difference.™

origin

Origin2600 Solar System Panel Specifications

Your Origin system will be supplied with one of the following sets of panels:

Manufacturer	Mono Or Poly	Size (Watts)
Canadian Solar	Poly	215
Canadian Solar	Poly	220
Suntech	Mono	190
Suntech	Poly	220
Trina Solar	Mono	190/195/200

Please note all solar panels supplied are CEC accredited and compliant with IEC/EN61730 and IEC/EN61215 or IEC/EN61646.

The choice of panels will be at the **sole discretion** of our installer subject to such matters as stock availability.

Please see the following specification sheet for further details and panel specifications.

STP190S - 24/Ad+
STP185S - 24/Ad+

SUNTECH
Solar powering a green future™

190 Watt
MONOCRYSTALLINE SOLAR MODULE



Features

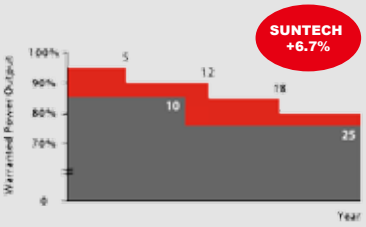
- **14.9%** — High module conversion efficiency (up to 14.9%), through superior manufacturing technology
- **0-5W** — Guaranteed 0-5W positive power output tolerance ensures high reliability
- **<1%** — Proprietary Gallium-F22 doping process dramatically reduces initial light-induced degradation to <1%, thus delivering better power and performance over time
- **4%** — New Jumbo cells with 4% larger solar cell area produce more power per module
- **2400Pa 5400Pa** — Entire module certified to withstand high wind loads (2400 Pascal) and snow loads (5400 Pascal) *

IEC TÜV CE cULus

Trust Suntech to Deliver Reliable Performance Over Time

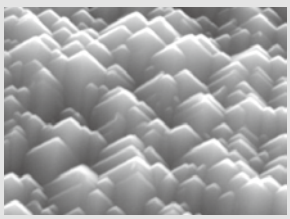
- World's leading manufacturer of crystalline silicon photovoltaic modules
- Unrivaled manufacturing capacity and world-class technology
- Rigorous quality control meeting the highest international standards : ISO 9001: 2008 and ISO 14001: 2004
- Certification and standards: IEC 61215, IEC 61730, conformity to CE

Industry-leading warranty

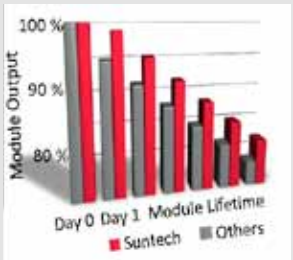


- 25 year transferrable power output warranty: 5 year/95%, 12 year/90%, 18 year/85%, 25 year/80% **
- Based on nominal power
- Warrants 6.7% more power than the market standard over 25 years
- 5 year material and workmanship warranty

* Please refer to Suntech Standard Module Installation Manual for details.
** Please refer to Suntech Product Warranty for details.



Patented surface pyramids enhance sunlight absorption by redirecting reflected light to other areas on the cell surface to be reabsorbed



Suntech cells feature a breakthrough process that replaces traditional boron doping with gallium doping. The effect of initial light-induced degradation is dramatically reduced, leading to greater power output over the entire module lifetime.

Graph is for illustration only and does not imply any guarantee of module performance. Please check warranty for details.

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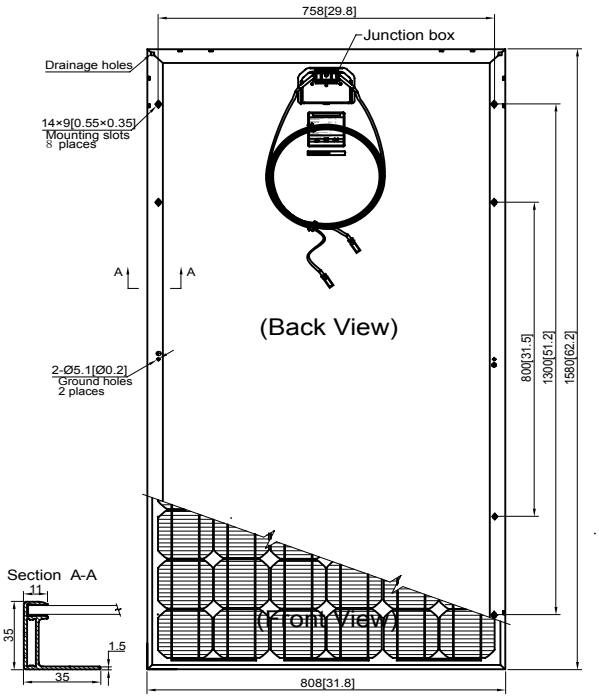
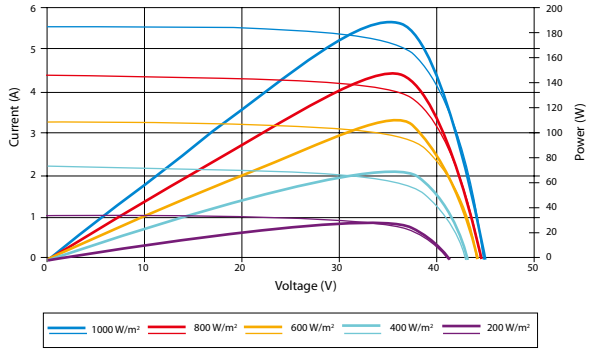
STP190S - 24/Ad+
STP185S - 24/Ad+



Note: mm [inch]

Current-Voltage & Power-Voltage Curve (190S-24)



Electrical Characteristics

STC	STP190S-24/Ad+	STP185S-24/Ad+
Optimum Operating Voltage (Vmp)	36.5 V	36.4 V
Optimum Operating Current (Imp)	5.20 A	5.09 A
Open - Circuit Voltage (Voc)	45.2 V	45.0 V
Short - Circuit Current (Isc)	5.62 A	5.43 A
Maximum Power at STC (Pmax)	190 W	185 W
Module Efficiency	14.9%	14.5%
Operating Temperature	-40 °C to +85 °C	-40°C to +85°C
Maximum System Voltage	600 V DC	600 V DC
Maximum Series Fuse Rating	15 A	15 A
Power Tolerance	0/+5 W	0/+5 W

STC: Irradiance 1000 W/m², module temperature 25 °C, AM=1.5

NOCT	STP190S-24/Ad+	STP185S-24/Ad+
Maximum Power (W)	139 W	135 W
Maximum Power Voltage (V)	33.1 V	33.0 V
Maximum Power Current (A)	4.19 A	4.10 A
Open Circuit Voltage (Voc)	41.3 V	41.0 V
Short Circuit Current (Isc)	4.56 A	4.40 A
Efficiency Reduction (from 1000 W/m² to 200 W/m²)	<4.5%	<4.5%

NOCT: Irradiance 800 W/m², ambient temperature 20 °C, wind speed 1 m/s

Mechanical Characteristics

Solar Cell	Monocrystalline 125 × 125 mm (5 inches)
No. of Cells	72 (6 × 12)
Dimensions	1580 × 808 × 35mm (62.2 × 31.8 × 1.4 inches)
Weight	15.5 kgs (34.1 lbs.)
Front Glass	3.2 mm (0.13 inches) tempered glass
Frame	Anodized aluminium alloy
Junction Box	IP67 rated
Output Cables	H+S RADOX® SMART cable 4.0 mm² (0.006 inches²), symmetrical lengths (-) 1000 mm (39.4 inches) and (+) 1000 mm (39.4 inches), H4 connectors (MC4 compatible)

Temperature Characteristics

Nominal Operating Cell Temperature (**NOCT**)	45±2°C
Temperature Coefficient of Pmax	-0.48 %/°C
Temperature Coefficient of Voc	-0.34 %/°C
Temperature Coefficient of Isc	0.037 %/°C

Dealer information box

Packing Configuration

Container	20' GP	40' GP
Pieces per pallet	26	26
Pallets per container	12	28
Pieces per container	312	728

Specifications are subject to change without further notification

STP225 - 20/Wd
STP220 - 20/Wd

SUNTECH
Solar powering a green future™

225 Watt
POLYCRYSTALLINE SOLAR PANEL



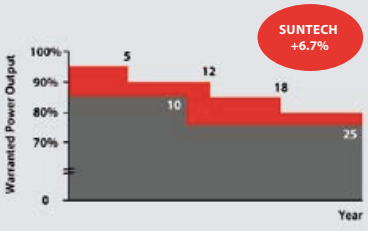
Features

- **0-5W** — Guaranteed 0-5W positive power output tolerance ensures high reliability
- **Self-clean** — Anti-reflective, hydrophobic coating improves light absorption and reduces surface dust
- **3 bus bar** — Three bus-bar design enhances cell reliability and reduces series resistance for large fill factor
- **Weak light** — Excellent performance under low light environments (mornings, evenings and cloudy days)
- **2400Pa 5400Pa** — Entire module certified to withstand high wind loads (2400 Pascal) and snow loads (5400 Pascal) *
- **4.0 mm** — 4.0mm thick tempered glass improves module durability

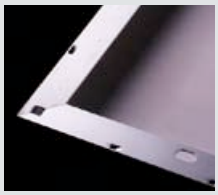
Trust Suntech to Deliver Reliable Performance Over Time

- World's leading manufacturer of crystalline silicon photovoltaic modules
- Unrivaled manufacturing capacity and world-class technology
- Rigorous quality control meeting the highest international standards : ISO 9001: 2008 and ISO 14001: 2004
- Certification and standards: IEC 61215, IEC 61730, conformity to CE

Industry-leading warranty



- 25 year transferrable power output warranty: 5 year/95%, 12 year/90%, 18 year/85%, 25 year/80% **
- Based on nominal power
- Warrants 6.7% more power than the market standard over 25 years
- 5 year material and workmanship warranty



Specially designed drainage holes and rigid construction prevent frame from deforming or breaking due to freezing weather and other forces.



Latest IP67 rated junction box improves module performance stability with enhanced thermal isolation.

* Please refer to Suntech Standard Module Installation Manual for details.
** Please refer to Suntech Product Warranty for details.

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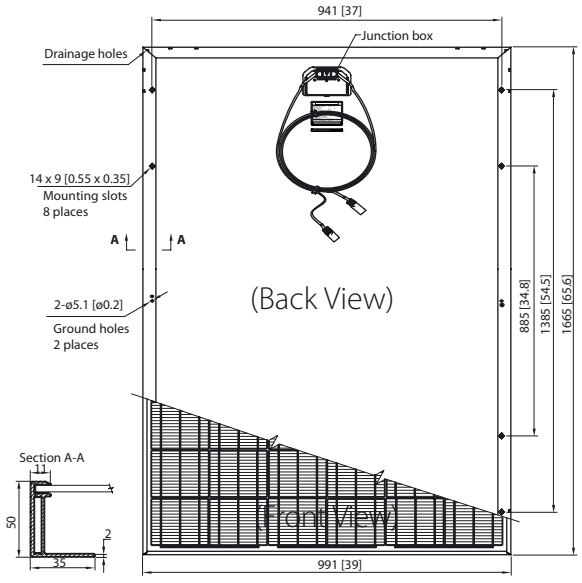
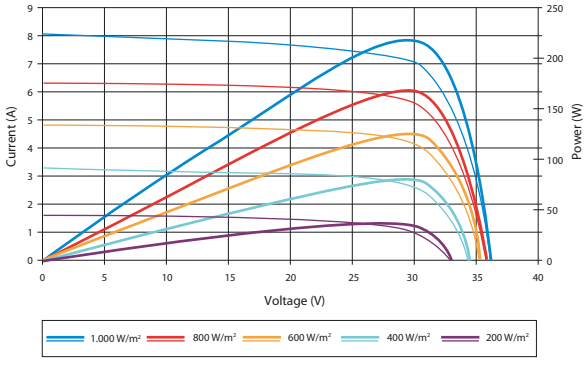
STP225 - 20/Wd
STP220 - 20/Wd



Note: mm [inch]

Current-Voltage & Power-Voltage Curve (220-20)



Temperature Characteristics

Nominal Operating Cell Temperature (**NOCT**)	45±2°C
Temperature Coefficient of Pmax	-0.47 %/°C
Temperature Coefficient of Voc	-0.34 %/°C
Temperature Coefficient of Isc	0.045 %/°C

Dealer information box

Specifications are subject to change without further notification

Electrical Characteristics

STC	STP225-20/Wd	STP220-20/Wd
Optimum Operating Voltage (Vmp)	29.6 V	29.5 V
Optimum Operating Current (Imp)	7.61 A	7.46 A
Open - Circuit Voltage (Voc)	36.7 V	36.6 V
Short - Circuit Current (Isc)	8.15 A	8.05 A
Maximum Power at STC (Pmax)	225 W	220 W
Operating Temperature	-40 °C to +85 °C	-40°C to +85°C
Maximum System Voltage	1000 V DC	1000 V DC
Maximum Series Fuse Rating	20 A	20 A
Power Tolerance	0/+5 W	0/+5 W

STC: Irradiance 1000 W/m^2, module temperature 25 °C, AM=1.5

NOCT	STP225-20/Wd	STP220-20/Wd
Maximum Power (W)	165 W	160 W
Maximum Power Voltage (V)	26.9 V	26.8 V
Maximum Power Current (A)	6.12 A	5.98 A
Open Circuit Voltage (Voc)	33.8 V	33.7 V
Short Circuit Current (Isc)	6.65 A	6.54 A
Efficiency Reduction (from 1000 W/m^2 to 200 W/m^2)	<4,5%	<4,5%

NOCT: Irradiance 800 W/m^2, ambient temperature 20 °C, wind speed 1 m/s

Mechanical Characteristics

Solar Cell	Polycrystalline 156 × 156 mm (6 inches)
No. of Cells	60 (6 × 10)
Dimensions	1665 × 991 × 50 mm (65.6 × 39.0 × 2.0 inches)
Weight	22.5 kgs (49.6 lbs.)
Front Glass	4 mm (0.16 inches) tempered glass
Frame	Anodized aluminium alloy
Junction Box	IP67 rated
Output Cables	H+S RADOX® SMART cable 4.0 mm^2 (0.006 inches^2), symmetrical lengths (-) 1000 mm (39.4 inches) and (+) 1000 mm (39.4 inches), MC4 connectors

Packing Configuration

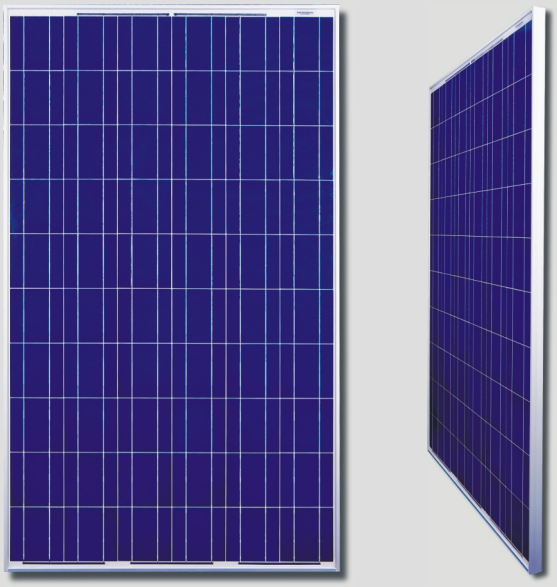
Container	20' GP	40' HC
Pieces per pallet	21	21
Pallets per container	6	28
Pieces per container	126	588

CanadianSolar

CS6P

190/195/200/205/210/215/220PE

e-Module



On-grid Module

CS6P-PE is a robust solar module with 60 solar cells. These modules can be used for on-grid solar applications. Our meticulous design and production techniques ensure a high-yield, long-term performance for every module produced. Our rigorous quality control and in-house testing facilities guarantee Canadian Solar's modules meet the highest quality standards possible.

Customer Values

- **Economical solar modules** with best performance-to-price ratio and fast return of investment (ROI)
- **Environmentally friendly production**, non-toxic and no potential environmental and legal risks

Key Features

- 6 years product warranty (materials and workmanship); 25 years module power output warranty
- Industry leading plus only power tolerance: +5W (+2.3%)
- Strong framed module, passing mechanical load test of 5400Pa to withstand heavier snow load
- The 1st manufacturer in the PV industry certified for ISO:TS16949 (The automotive quality management system) in module production since 2003
- ISO17025 qualified manufacturer owned testing lab, fully complying to IEC, TUV, UL testing standards

Applications

- On-grid residential roof-tops
- On-grid commercial/industrial roof-tops
- Solar power stations
- Other on-grid applications

Quality Certificates

- IEC 61215, IEC 61730, UL1703, CEC Listed, JET, CE, CQC
- ISO9001:2008: Standards for quality management systems
- ISO/TS16949:2009: The automotive quality management system
- QC080000 HSPM: The Certification for Hazardous Substances Regulations

www.canadiansolar.com

CS6P-190/195/200/205/210/215/220 PE
e-Module

Electrical Data

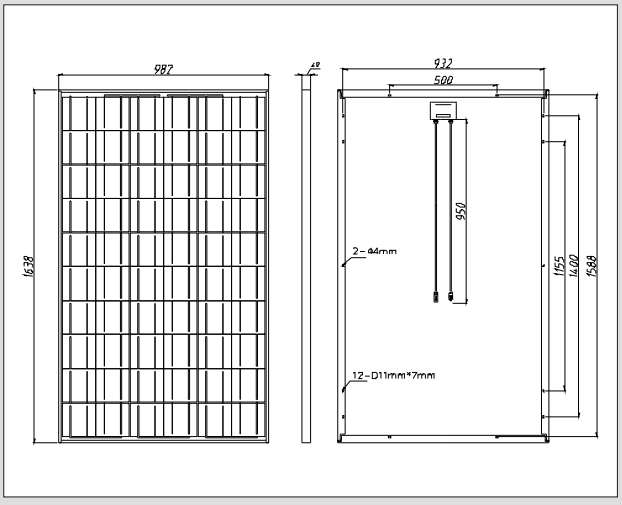
		CS6P-190PE	CS6P-195PE	CS6P-200PE	CS6P-205PE	CS6P-210PE	CS6P-215PE	CS6P-220PE
Nominal Maximum Power at STC (Pmax)		190W	195W	200W	205W	210W	215W	220W
Optimum Operating Voltage (Vmp)		28.6V	28.7V	28.9V	28.9V	29.0V	29.0V	29.2V
Optimum Operating Current (Imp)		6.64A	6.80A	6.93A	7.09A	7.25A	7.40A	7.53A
Open Circuit Voltage (Voc)		36.0V	36.1V	36.2V	36.2V	36.4V	36.5V	36.6V
Short Circuit Current (Isc)		7.42A	7.54A	7.67A	7.78A	7.89A	8.01A	8.09A
Operating Temperature		-40℃~+85℃						
Maximum System Voltage		1000V (IEC) /600V (UL)						
Maximum Series Fuse Rating		15A						
Power Tolerance		+5W						
Temperature Coefficient	Pmax	-0.42%/℃						
	Voc	-0.35 %/℃						
	Isc	0.08 %/℃						
	NOCT	45℃						

Under Standard Test Conditions (STC) of irradiance of 1000W/m², spectrum AM 1.5 and cell temperature of 25℃

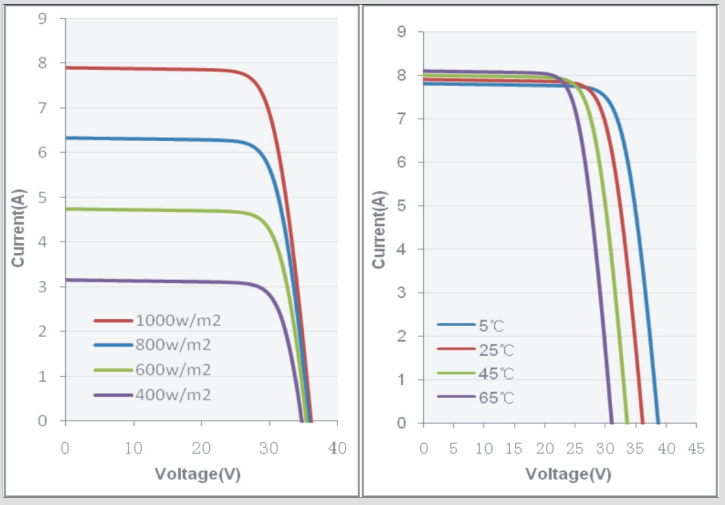
Mechanical Data

Cell Type	Poly-crystalline Solar Grade Silicon
Cell Arrangement	60 (6 x 10)
Dimensions	1638 x 982 x 40mm (64.5 x 38.7 x 1.57in)
Weight	20kg (44.1 lbs)
Front Cover	Tempered glass
Frame Material	Anodized aluminium alloy
Standard Packaging (Modules per Pallet)	20pcs

Engineering Drawings



I-V Curves (CS6P-210PE)



*Specifications included in this datasheet are subject to change without prior notice.

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About Canadian Solar

Canadian Solar Inc. is one of the world's largest solar companies. As a leading vertically-integrated manufacturer of ingots, wafers, cells, solar modules and solar systems. Canadian Solar delivers solar power products of uncompromising quality to worldwide customers. Canadian Solar's world class team of professionals works closely with our customers to provide them with solutions for all their solar needs.

Canadian Solar was founded in Canada in 2001 and was successfully listed on NASDAQ Exchange (symbol: CSIQ) in November 2006. In 2009, Canadian Solar's full year shipment was 325.5 MW with a module capacity of 820MW.

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inquire.ca@canadiansolar.com
www.canadiansolar.com

TSM-DC01A
TSM-DA01A

THE Comax SOLUTION
by Trinasolar



15.6%
MAX EFFICIENCY

200W
MAX POWER OUTPUT

10 YEAR
PRODUCT WARRANTY

25 YEAR
LINEAR POWER WARRANTY

Module can bear snow loads up to **5400Pa** and wind loads up to **2400Pa**

Guaranteed power output
0~+3%

High performance under low light conditions
Cloudy days, mornings and evenings

Optimized corners increase output up to **195W**

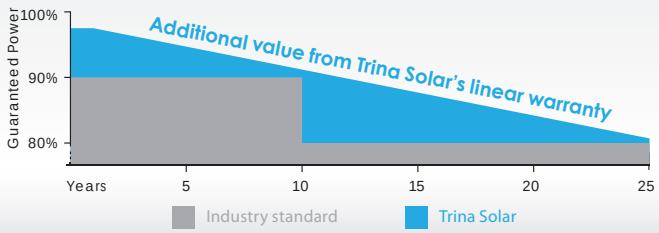
Independently certified by **international certification bodies**

Manufactured according to International Quality and Environment Management System Standards
ISO9001, ISO14001

NEW

LINEAR PERFORMANCE WARRANTY

10 Year Product Warranty • 25 Year Linear Power Warranty



Founded in 1997, Trina Solar is a vertically integrated PV manufacturer, involved in the production of ingots, wafers and cells to the assembly of high quality modules, using both mono and multicrystalline technologies. As of July 2011, the Company has already achieved an annualized nameplate module capacity of approximately 1.9GW. Trina Solar's wide range of products are used in residential, commercial, industrial and public utility applications throughout the world.

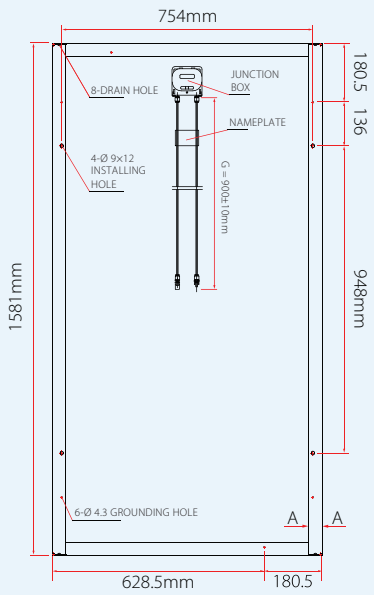
Only by matching an efficient cost-structure with proven performance will we as an industry achieve grid parity. And at Trina Solar, we have both.

Trina Solar Limited
www.trinasolar.com

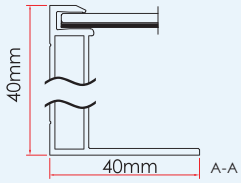
Trinasolar
The power behind the panel

TSM-DC01A / TSM-DA01A THE Comax SOLUTION

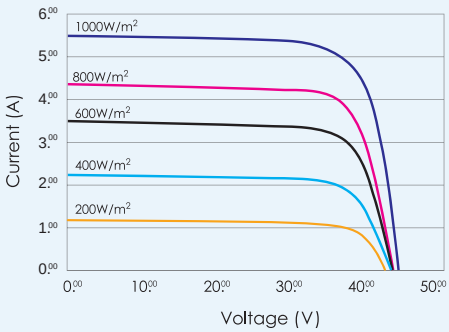
DIMENSIONS OF PV MODULE TSM-DC/DA 01A



Back View



I-V CURVES OF PV MODULE TSM-190 DC/DA 01A



Average efficiency reduction of 4.5% at 200W/m² according to EN 60904-1.

CERTIFICATION

ELECTRICAL DATA @ STC	TSM-190 DC/DA01A	TSM-195 DC/DA01A	TSM-200 DC/DA01A
Peak Power Watts-P_{MAX} (Wp)	190	195	200
Power Output Tolerance-P_{MAX} (%)	0/+3	0/+3	0/+3
Maximum Power Voltage-V_{MP}(V)	36.6	37.1	37.6
Maximum Power Current-I_{MPP} (A)	5.19	5.25	5.32
Open Circuit Voltage-V_{OC} (V)	45.1	45.6	46.0
Short Circuit Current-I_{SC} (A)	5.52	5.56	5.60
Module Efficiency η_m (%)	14.9	15.2	15.6

Values at Standard Test Conditions STC (Air Mass AM1.5, Irradiance 1000W/m², Cell Temperature 25°C).

ELECTRICAL DATA @ NOCT	TSM-190 DC/DA01A	TSM-195 DC/DA01A	TSM-200 DC/DA01A
Maximum Power (W)	140	143	147
Maximum Power Voltage (V)	33.8	34.3	34.8
Maximum Power Current (A)	4.14	4.18	4.23
Open Circuit Voltage (V)	41.7	42.2	42.5
Short Circuit Current (A)	4.44	4.47	4.5

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

MECHANICAL DATA	
Solar cells	Monocrystalline 125 × 125mm (5 inches)
Cell orientation	72 cells (6 × 12)
Module dimension	1581 × 809 × 40mm (62.24 × 31.85 × 1.57 inches)
Weight	15.6kg (34.4 lb)
Glass	High transparancy solar glass 3.2mm (0.13 inches)
Frame	Anodized aluminium alloy
J-Box	IP 65 rated
Cables / Connector	Photovoltaic Technology cable 4.0mm² (0.006 inches²), 900mm (35.4 inches), MC4

TEMPERATURE RATINGS	
Nominal Operating Cell Temperature (NOCT)	46°C (±2°C)
Temperature Coefficient of P_{MAX}	- 0.40%/°C
Temperature Coefficient of V_{OC}	- 0.30%/°C
Temperature Coefficient of I_{SC}	0.023%/°C

MAXIMUM RATINGS	
Operational Temperature	-40~+85°C
Maximum System Voltage	1000V DC(IEC)/ 600V DC(UL)
Max Series Fuse Rating	10A

WARRANTY
10 year workmanship warranty
25 year linear performance warranty

(Please refer to product warranty for details)

PACKAGING CONFIGURATION
Modules per box: 23 pcs
Modules per 40' container: 644 pcs

TSM_EN_Feb_2012

Trinasolar
The power behind the panel

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.
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