

# DUOMAX<sup>M</sup> PLUS<sup>+</sup> MODULE

TSM-DEG5 (II)



**60 CELL**  
MONOCRYSTALLINE MODULE

**280-315W**  
POWER OUTPUT RANGE

**19.2%**  
MAXIMUM EFFICIENCY

**0/+5W**  
POSITIVE POWER TOLERANCE

Founded in 1997, Trina Solar is the world's leading comprehensive solutions provider for solar energy. We believe close cooperation with our partners is critical to success. Trina Solar now distributes its PV products to over 60 countries all over the world. Trina Solar is able to provide exceptional service to each customer in each market and supplement our innovative, reliable products with the backing of Trina Solar as a strong, bankable partner. We are committed to building strategic, mutually beneficial collaboration with installers, developers, distributors and other partners.

## Comprehensive Product And System Certificates

IEC61215/IEC61730/UL1703/IEC61701/IEC62716  
 ISO 9001: Quality Management System  
 ISO 14001: Environmental Management System  
 ISO14064: Greenhouse Gas Emissions Verification  
 OHSAS 18001: Occupational Health and Safety Management System



### Excellent low light performance on cloudy days, mornings and evenings

- Back surface field
- Monocrystalline cells with advanced Honey surface texturing
- Selective emitter



### Maximize limited space with top-end efficiency

- Up to 192 W/m<sup>2</sup> power density
- Low thermal coefficients for greater energy production at high operating temperatures



### Improved durability

- Anti PID
- Reduced soiling due to natural cleaning



### Enhanced safety

- Fire class A certified by TÜV Rheinland according to fire test IEC 61730-2 / MST 23



### Increased value

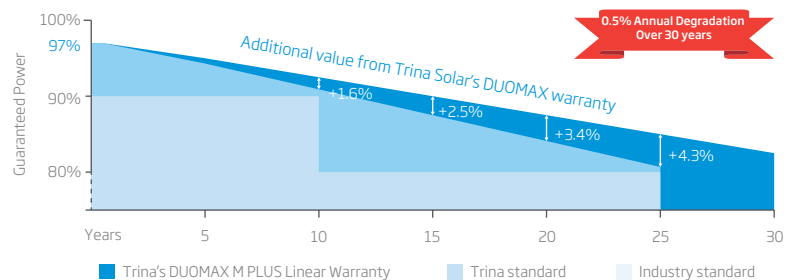
- 1,500 V system voltage reduces BOS costs by increased string length
- 30 year linear warranty
- 0.5 % annual degradation



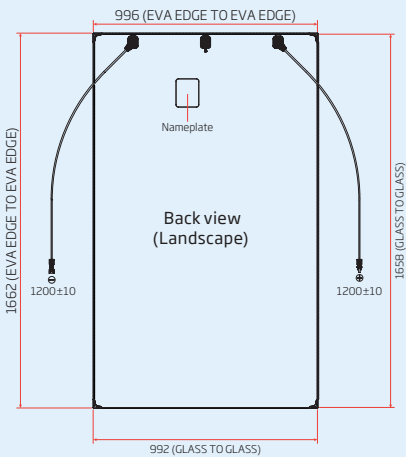
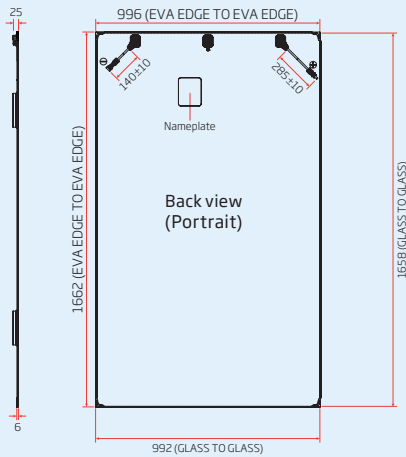
### Certified to withstand challenging environmental conditions

- Module coating resistant to sand, acid, and alkali
- 2400 Pa wind load
- 5400 Pa snow load
- 35 mm hail stones at 97 km/h

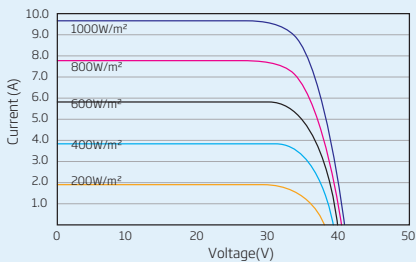
Trina Solar's DUOMAX M PLUS Linear Performance Warranty



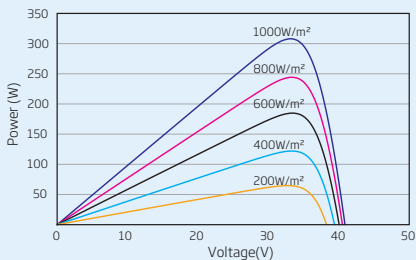
**DIMENSIONS OF PV MODULE  
TSM-DEG5 (II)  
(unit: mm)**



**I-V CURVES OF PV MODULE (305W)**



**P-V CURVES OF PV MODULE (305W)**



ELECTRICAL DATA @ STC	TSM-280	TSM-285	TSM-290	TSM-295	TSM-300	TSM-305	TSM-310	TSM-315
Peak Power Watts- $P_{MAX}$ (Wp)*	280	285	290	295	300	305	310	315
Power Output Tolerance- $P_{MAX}$ (W)	0/+5	0/+5	0/+5	0/+5	0/+5	0/+5	0/+5	0/+5
Maximum Power Voltage- $V_{MPP}$ (V)	31.7	31.8	32.2	32.5	32.7	32.9	33.1	33.3
Maximum Power Current- $I_{MPP}$ (A)	8.84	8.96	9.02	9.08	9.18	9.26	9.37	9.46
Open Circuit Voltage- $V_{OC}$ (V)	38.4	38.5	38.7	39.4	39.8	40.0	40.2	40.4
Short Circuit Current- $I_{SC}$ (A)	9.44	9.49	9.59	9.75	9.81	9.84	9.86	9.88
Module Efficiency $\eta_m$ (%)	17.0	17.3	17.6	17.9	18.2	18.5	18.8	19.2

STC: Irradiance 1000 W/m<sup>2</sup>, Cell Temperature 25 °C, Air Mass AM1.5  
\* Measuring tolerance: ±3%

ELECTRICAL DATA @ NOCT	TSM-280	TSM-285	TSM-290	TSM-295	TSM-300	TSM-305	TSM-310	TSM-315
Maximum Power- $P_{MAX}$ (Wp)	209	212	216	220	223	227	231	235
Maximum Power Voltage- $U_{MPP}$ (V)	29.4	29.5	29.9	30.1	30.3	30.5	30.7	30.9
Maximum Power Current- $I_{MPP}$ (A)	7.10	7.20	7.25	7.30	7.38	7.44	7.53	7.60
Open Circuit Voltage- $U_{OC}$ (V)	35.7	35.8	36.0	36.6	37.0	37.2	37.4	37.5
Short Circuit Current- $I_{SC}$ (A)	7.62	7.66	7.74	7.87	7.92	7.94	7.96	7.98

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

**MECHANICAL DATA**

Solar Cells	Monocrystalline 156.75 × 156.75 mm
Cell Orientation	60 cells (6 × 10)
Module Dimensions	1658 × 992 × 6 mm 1662 × 996 × 6 mm with edge banding 1664 × 998 × 7.6 mm with corner protector (Std)*
Weight	23.5 kg
Front Glass	2.5 mm, high transparency, AR coated and heat strengthened glass
EVA	White
Back Glass	2.5 mm, heat strengthened glass
Frame	Frameless
J-Box	IP 67 rated or IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm <sup>2</sup> Portrait: 140/285 mm, Landscape: 1200/1200 mm
Connector	MC4 EVO2/UTX/TS4

\* Do not combine with slide-in solutions.

**TEMPERATURE RATINGS**

Nominal Operating Cell Temperature (NOCT)	44 °C (±2K)
Temperature Coefficient of $P_{MAX}$	- 0.39%/K
Temperature Coefficient of $V_{OC}$	- 0.29%/K
Temperature Coefficient of $I_{SC}$	0.05%/K

**MAXIMUM RATINGS**

Operational Temperature	-40 to +85 °C
Maximum System Voltage	1500V DC (IEC) 1000V DC (UL)
Max Series Fuse Rating**	15 A (Power ≤ 290 W) 20 A (Power ≥ 295 W)
Mechanical Load*	5400 Pa
Wind Load*	2400 Pa

\* Max. mechanical loading values depend on the mounting method applied and only clamps approved by Trina Solar should be used.

\*\* DO NOT connect fuse in combiner box with two or more strings in parallel connection.

**WARRANTY**

10 year Product Workmanship Warranty
30 year Linear Performance Warranty
(Please refer to product warranty for details)

**PACKAGING CONFIGURATION**

Modules per box:	33 pieces
Modules per 40' container:	858 pieces

**MORE OPTIONS**

Compact AR (Antireflective) coating
POE (Polyolefin Elastomer) foil

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