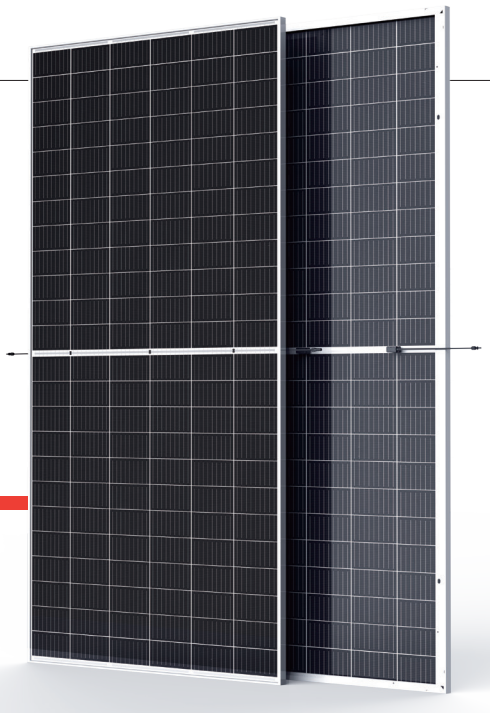
THE

# DUOMAX twin

## BIFACIAL DUAL GLASS 144 CELL MULTI BUSBAR MODULE



| PRODUCTS | POWER RANGE |
|---|---|
| TSM-DEG15MC.20(II) | 390-415W |

**144-Cell**
MONOCRYSTALLINE MODULE

**390-415W**
POWER OUTPUT RANGE

**20.5%**
MAXIMUM EFFICIENCY

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

Founded in 1997, Trina Solar is the world's leading total solution provider for solar energy. With local presence around the globe, Trina Solar is able to provide exceptional service to each customer in each market and deliver our innovative, reliable products with the backing of Trina as a strong, bankable brand. Trina Solar now distributes its PV products to over 100 countries all over the world. We are committed to building strategic, mutually beneficial collaborations with installers, developers, distributors and other partners in driving smart energy together.

### Comprehensive Products and System Certificates

UL 61730
IEC61215/IEC61730/IEC61701/IEC62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
OHSAS 18001: Occupation Health and Safety Management System

Trinasolar

## High power output

- Up to 415W front power and 20.5% module efficiency with half-cut and MBB (Multi Busbar) technology enabling higher BOS savings
- Lower resistance of half-cut cells ensures higher power

## Certified to perform in highly challenging environments

- High PID resistance through cell process and module material control
- Resistant to salt, acid, sand, and ammonia
- Proven to be reliable in high temperature and humidity areas
- Certified to the best fire class A
- Minimizes micro-crack and snail trails
- Certified to 5400 Pa positive load and 2400 Pa negative load

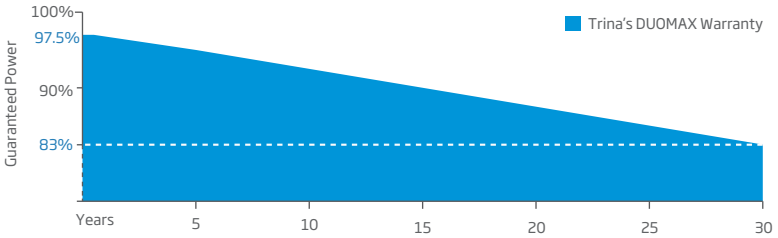
## High energy generation, low LCOE

- Up to 25% additional power gain from back side, depending on the albedo
- Excellent 3rd party validated IAM and low light performance with cell process and module material optimization
- Low temp coefficient (-0.35%) and NMOT increases energy production
- Better anti-shading performance and lower operating temperature
- Higher power from same installation footprint as standard modules

## Easy to install, wide application

- Frame design enables compatibility with standard installation methods
- Deployable for ground mounted utility, carports, and agricultural projects
- Safe and easy to transport, handle, and install like normal framed modules

Trina Solar's DUOMAX Performance Warranty

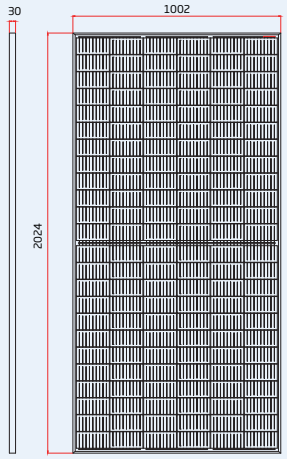



From the 2nd year to the 30th year, the average annual power decline will be no more than 0.5%.

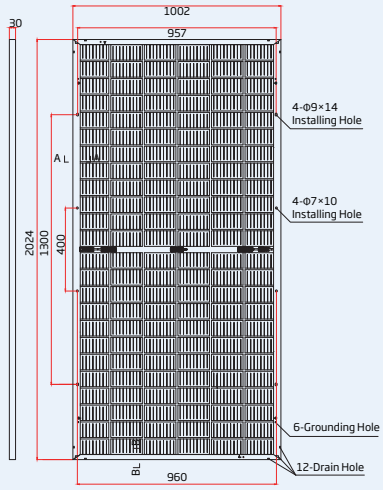
DUOMAX twin

# BIFACIAL DUAL GLASS 144 HALF-CELL MBB MODULE

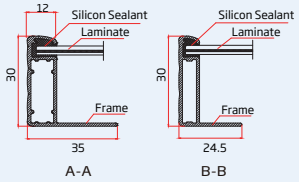
## DIMENSIONS OF PV MODULE (mm)



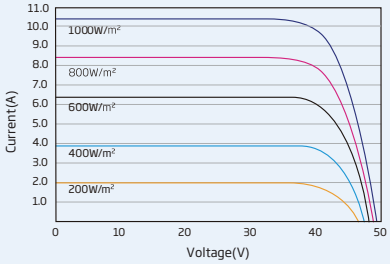

Front View



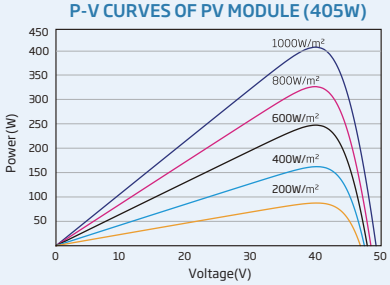

Back View




## I-V CURVES OF PV MODULE (405 W)




## P-V CURVES OF PV MODULE (405W)




## ELECTRICAL DATA (STC)

| | | | | | | |
|---|---|---|---|---|---|---|
| Peak Power Watts-$P_{MAX}$ (Wp)* | 390 | 395 | 400 | 405 | 410 | 415 |
| Power Output Tolerance-$P_{MAX}$ (W) | | | 0 ~ +5 | | | |
| Maximum Power Voltage-$V_{MPP}$ (V) | 40.2 | 40.5 | 40.8 | 41.1 | 41.4 | 41.5 |
| Maximum Power Current-$I_{MPP}$ (A) | 9.71 | 9.76 | 9.81 | 9.86 | 9.91 | 10.02 |
| Open Circuit Voltage-$V_{OC}$ (V) | 48.5 | 48.7 | 48.9 | 49.1 | 49.3 | 49.4 |
| Short Circuit Current-$I_{SC}$ (A) | 10.25 | 10.29 | 10.33 | 10.37 | 10.41 | 10.52 |
| Module Efficiency $\eta_m$ (%) | 19.2 | 19.5 | 19.7 | 20.0 | 20.2 | 20.5 |

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

## ELECTRICAL DATA (NMOT)

| | | | | | | |
|---|---|---|---|---|---|---|
| Maximum Power-$P_{MAX}$ (Wp) | 295 | 299 | 302 | 306 | 310 | 315 |
| Maximum Power Voltage-$V_{MPP}$ (V) | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.0 |
| Maximum Power Current-$I_{MPP}$ (A) | 7.82 | 7.86 | 7.90 | 7.93 | 7.97 | 8.05 |
| Open Circuit Voltage-$V_{OC}$ (V) | 45.7 | 45.9 | 46.1 | 46.3 | 46.5 | 46.7 |
| Short Circuit Current-$I_{SC}$ (A) | 8.26 | 8.29 | 8.33 | 8.36 | 8.39 | 8.47 |

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

## Electrical characteristics with different rear side power gains (referenced specifically to 405 Wp front)**

| | | | | | |
|---|---|---|---|---|---|
| Maximum Power-$P_{MAX}$ (Wp) | 425 | 446 | 466 | 486 | 506 |
| Maximum Power Voltage-$V_{MPP}$ (V) | 41.1 | 41.1 | 41.1 | 41.1 | 41.1 |
| Maximum Power Current-$I_{MPP}$ (A) | 10.35 | 10.85 | 11.34 | 11.83 | 12.33 |
| Open Circuit Voltage-$V_{OC}$ (V) | 49.2 | 49.3 | 49.4 | 49.5 | 49.6 |
| Short Circuit Current-$I_{SC}$ (A) | 10.89 | 11.41 | 11.93 | 12.44 | 12.96 |
| $P_{max}$ gain | 5% | 10% | 15% | 20% | 25% |

Power Bifaciality:70±5%.

## MECHANICAL DATA

| | |
|---|---|
| Solar Cells | Monocrystalline |
| Cell Orientation | 144 cells (6 × 24) |
| Module Dimensions | 2024 × 1002 × 30 mm (79.69 × 39.45 × 1.18 inches) |
| Weight | 26.0 kg (57.3 lb) |
| Front Glass | 2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass |
| Encapsulant material | POE/EVA |
| Back Glass | 2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass) |
| Frame | 30mm (1.18 inches) Anodized Aluminium Alloy |
| J-Box | IP 68 rated |
| Cables | Photovoltaic Technology Cable 4.0 mm² (0.006 inches²)<br>Portrait: 280/280 mm (11.02/11.02 inches)<br>Landscape: 1900/1900 mm (74.80/74.80 inches) |
| Connector | Trina TS4/MC4 |

## TEMPERATURE RATINGS

| | |
|---|---|
| NMOT(Nominal Moudule Operating Temperature) | 41°C (±3°C) |
| Temperature Coefficient of $P_{MAX}$ | - 0.35%/°C |
| Temperature Coefficient of $V_{OC}$ | - 0.25%/°C |
| Temperature Coefficient of $I_{SC}$ | 0.04%/°C |

## MAXIMUM RATINGS

| | |
|---|---|
| Operational Temperature | -40~+85°C |
| Maximum SystemVoltage | 1500V DC (IEC) |
| | 1500V DC (UL) |
| Max Series Fuse Rating | 20A |

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

## WARRANTY

12 year Product Workmanship Warranty

30 year Power Warranty

(Please refer to product warranty for details)

** Back-side power gain varies depending upon the specific project albedo

## PACKAGING CONFIGURATION

Modules per box: 35 pieces

Modules per 40' container: 665 pieces

Pallet dimensions (L x W x H): 2060 x 1120 x 1178 mm

Pallet weight: 973kg (2,145lb)

Trinasolar

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



Version number: TSM_DEG15MC20_EN_2020_RD_C

www.trinasolar.com