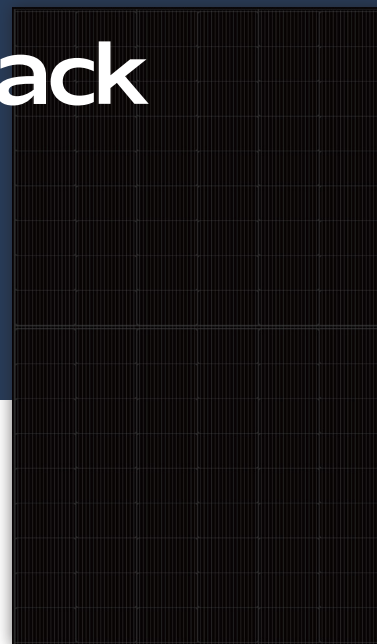


## Tangra™ M Pro HD C Black

### 485–505W

#### Composite Frame

N-Type High efficiency Bifacial Dual Glass Module



Bifacial technology enables additional energy harvesting from rear side (up to 30%)



30-year lifespan delivers 10-30% more power compared with conventional P-type modules



The natural lack of LID in the N-type solar cell can increase power generation



Excellent low irradiance performance



Better light trapping and current collection to improve module power output and reliability



Industry-leading, lowest thermal coefficient



Optimized electrical design and lower operating current for reduced hot spot loss and better temperature

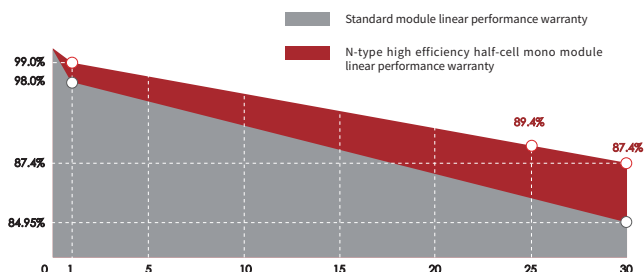


Certified to withstand 2400 Pa of wind load and 5400 Pa of snow load



100% triple EL test, which greatly reduces the hidden cracks rate

### LINEAR PERFORMANCE WARRANTY



**15** years

Product quality & process guarantee

**30** years

Linear power guarantee

**0.40** %

Annual degradation

### COMPREHENSIVE CERTIFICATES



ISO 9001: Quality Management System

ISO 14001: Environmental Management System Standard

ISO 45001: International Occupational Health and Safety Assessment System Standard

SA8000: 2014 Social Accountability Management System

\* Different markets have different certification requirements. Also, the products are under rapid innovation. Please confirm the certification status with regional sales representatives.

### WARRANTY INSURANCE



Warranty partner

Munich RE



中国平安  
PING AN  
P & C INSURANCE CO CN SZN

\* Optional performance warranty insurance. Please contact our local sales staff for more information.

## ELECTRICAL CHARACTERISTICS

**108 cells**

| Model of modules                     | TS-BGT54(485)-G1I |       | TS-BGT54(490)-G1I |       | TS-BGT54(495)-G1I |       | TS-BGT54(500)-G1I |       | TS-BGT54(505)-G1I |       |
|--------------------------------------|-------------------|-------|-------------------|-------|-------------------|-------|-------------------|-------|-------------------|-------|
|                                      | STC               | NMOT  | STC               | NMOT  | STC               | NMOT  | STC               | NMOT  | STC               | NMOT  |
| Maximum power — $P_{mp}$ (W)         | 485               | 371   | 490               | 375   | 495               | 378   | 500               | 382   | 505               | 386   |
| Open-circuit voltage — $V_{oc}$ (V)  | 39.20             | 37.10 | 39.50             | 37.40 | 39.80             | 37.70 | 40.10             | 38.00 | 40.40             | 38.30 |
| Short-circuit current — $I_{sc}$ (A) | 15.77             | 12.72 | 15.80             | 12.74 | 15.83             | 12.76 | 15.86             | 12.78 | 15.89             | 12.80 |
| Maximum power voltage — $V_{mp}$ (V) | 32.68             | 30.86 | 32.88             | 31.08 | 33.10             | 31.30 | 33.30             | 31.52 | 33.50             | 31.73 |
| Maximum power current — $I_{mp}$ (A) | 14.85             | 12.02 | 14.91             | 12.05 | 14.97             | 12.08 | 15.03             | 12.11 | 15.08             | 12.15 |
| Module efficiency — $\eta_m$ (%)     | 21.8              |       | 22.0              |       | 22.3              |       | 22.5              |       | 22.7              |       |

**STC** (Standard Testing Conditions): Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25 °C, Spectra at AM1.5

**NMOT** (Nominal Module Operating Temperature): Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20 °C, Spectra at AM1.5, Wind at 1m/s

### ELECTRICAL CHARACTERISTICS WITH DIFFERENT POWER BIN (REFERENCE TO 13.5% IRRADIANCE RATIO)

|  |       |       |       |       |       |
|--|-------|-------|-------|-------|-------|
| Peak Power ( $P_{max}$ ) (W)           | 538   | 543   | 549   | 555   | 560   |
| Open Circuit Voltage ( $V_{oc}$ ) (V)  | 39.20 | 39.50 | 39.80 | 40.10 | 40.40 |
| Short Circuit Current ( $I_{sc}$ ) (A) | 17.47 | 17.51 | 17.54 | 17.57 | 17.61 |
| MPP Voltage ( $V_{mp}$ ) (V)           | 32.68 | 32.88 | 33.10 | 33.30 | 33.50 |
| MPP Current ( $I_{mp}$ ) (A)           | 16.45 | 16.52 | 16.59 | 16.65 | 16.71 |

### STRUCTURAL CHARACTERISTICS

|                       |  |
|-----------------------|--|
| Module size (L*W*H)   | 1961x 1134 x 30 mm                         |
| Weight                | 27.5±1kg                                   |
| Cell                  | 108 cells, N-type monocrystalline          |
| Front glass           | 2.0 mm, anti-reflection coating            |
| Back glass            | 2.0 mm, heat strengthened glass            |
| Frame                 | Black GFRP(Glass Fiber Reinforced Polymer) |
| Junction box          | IP68, 3 diodes                             |
| Output wire           | 4.0 mm <sup>2</sup>                        |
| Wire length           | 300mm/1200mm/customized                    |
| Connector             | MC4 Compatible                             |
| Packing Specification | 36pcs/pallet; 864 pcs/40'HQ                |

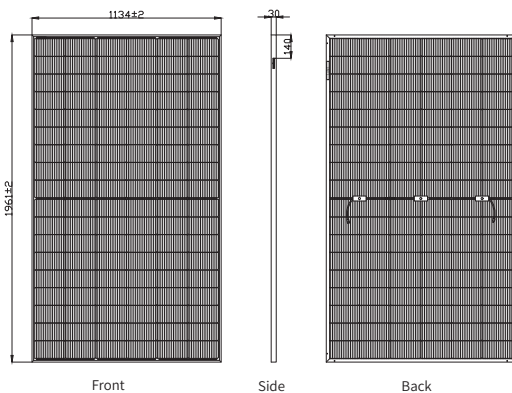
### OPERATING PARAMETERS

|                                    |                       |
|------------------------------------|-----------------------|
| Power tolerance (W)                | (0,+5)                |
| Maximum system voltage (V)         | 1500                  |
| Maximum rated fuse current (A)     | 30                    |
| Current operating temperature (°C) | -40~+85 °C            |
| Mechanical load                    | 5400 Pa * / 2400 Pa ∞ |

### TEMPERATURE PERFORMANCE RATINGS

|                                       |            |
|---------------------------------------|------------|
| Temperature coefficient ( $P_{max}$ ) | -0.30 %/°C |
| Temperature coefficient ( $V_{oc}$ )  | -0.28 %/°C |
| Temperature coefficient ( $I_{sc}$ )  | +0.04 %/°C |
| Nominal Module Operating Temperature  | 43±2 °C    |

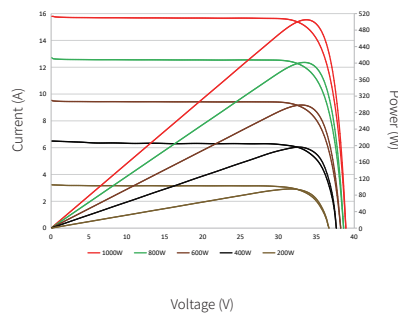
### MODULE DIMENSIONS (MM)



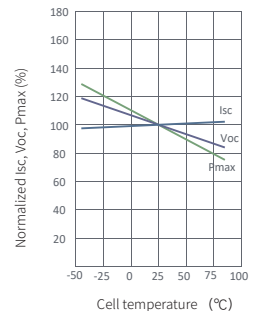
\* The unmarked tolerance is ±1 mm  
Length shown in mm

\* For clamp mounting only

Characteristic curves (500W)



Temperature Dependence of  $I_{sc}$ ,  $V_{oc}$ ,  $P_{max}$



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E-mail: [info@thornovasolar.com](mailto:info@thornovasolar.com)

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