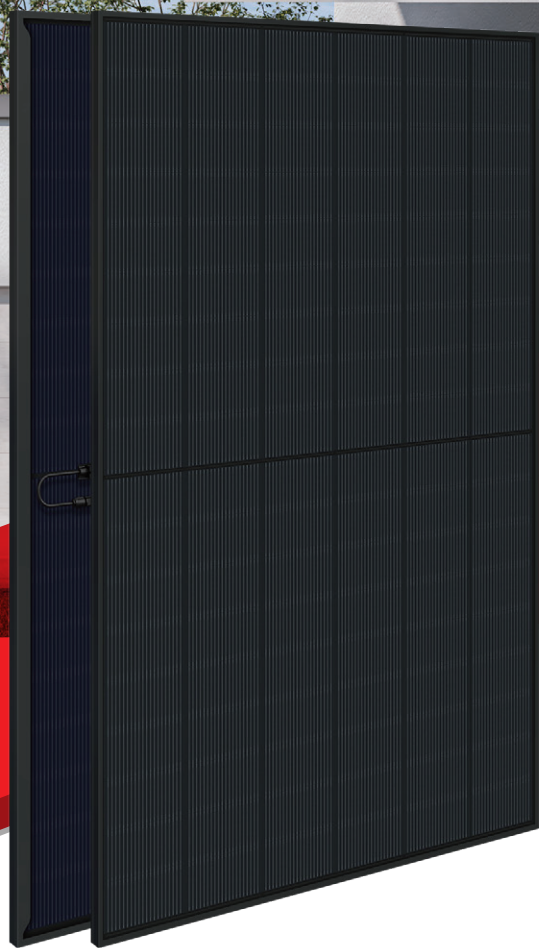
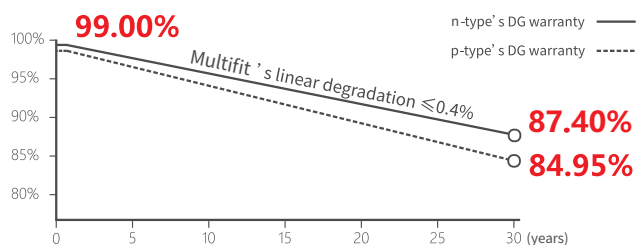




# N-TYPE MONO-CRYSTALLINE MODULE MUL-10M-460M-108

## MULTIFIT Linear Power Output Warranty Standard

**25** 25-year Product Warranty **30** 30-year Linear Power Warranty



- IEC 61215, IEC 61730
- ISO 9001:2015:ISO Quality Management System
- ISO 14001:2015:ISO Environment Management System
- ISO 45001:Occupational Health and Safety



### n-type TOPCon 4.0

Novel upgrade, enhancing module efficiency



### ZBB-TF (Tiling Film)

Zero-busbar integrated interconnection



### Sleek Design

≤ 2 m<sup>2</sup> area, easy to transport and install



### All-black Technology

Sleek crystalline black appearance, seamlessly blending into rooftops

**440~460W**

POWER RANGE

**0~+3%**

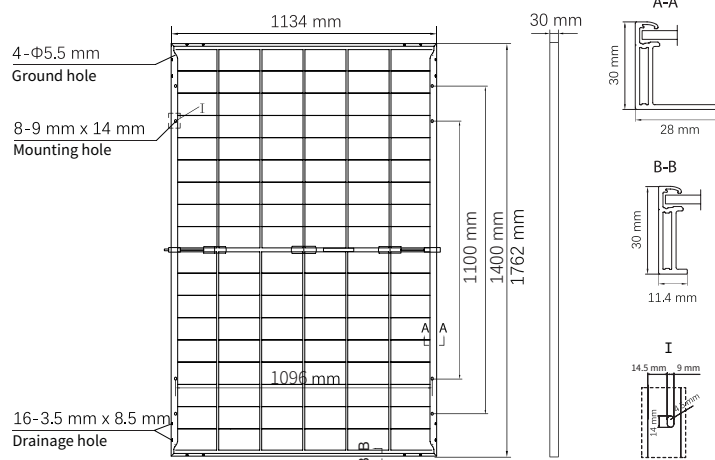
POWER SORTING

**23.0%**MAX MODULE  
EFFICIENCY**≤ 1.0%**FIRST YEAR  
POWER DEGRADATION**≤ 0.4%**YEAR 2-30  
POWER DEGRADATION

## Mechanical Specifications

|                                              |                                                      |
|----------------------------------------------|------------------------------------------------------|
| Outer dimensions (L x W x H)                 | 1762 x 1134 x 30 mm                                  |
| Cell type                                    | n-type mono-crystalline                              |
| No. of cells                                 | 108 (6*18)                                           |
| Frame technology                             | Aluminum, black anodized                             |
| Front / Back glass                           | 1.6+1.6 mm                                           |
| Cable length (Including connector)           | Portrait: (+)350 mm, (-)250 mm;<br>Customized length |
| Cable diameter (IEC/UL)                      | 4 mm <sup>2</sup> / 12 AWG                           |
| ① Maximum mechanical test load               | 5400 Pa (front) / 2400 Pa (back)                     |
| Connector type (IEC/UL)                      | HCB40 (Standard) / MC4-EVO2A (Optional)              |
| Module weight                                | 21.5 kg                                              |
| Packing unit                                 | 36 pcs / box                                         |
| Weight of packing unit (for 40'HQ container) | 820 kg                                               |
| Modules per 40' HQ container                 | 936 pcs (Subject to sales contract)                  |

① Refer to Multifit crystalline installation manual or contact technical department.  
Maximum Mechanical Test Load=1.5×Maximum Mechanical Design Load.



## Electrical Specifications

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

|                                                  |       |       |       |       |       |
|--------------------------------------------------|-------|-------|-------|-------|-------|
| Rated output (P <sub>mp</sub> / W <sub>p</sub> ) | 440   | 445   | 450   | 455   | 460   |
| Rated voltage (V <sub>mp</sub> / V)              | 33.05 | 33.22 | 33.39 | 33.56 | 33.73 |
| Rated current (I <sub>mp</sub> / A)              | 13.31 | 13.40 | 13.48 | 13.56 | 13.64 |
| Open circuit voltage (V <sub>oc</sub> / V)       | 39.00 | 39.20 | 39.40 | 39.60 | 39.80 |
| Short circuit current (I <sub>sc</sub> / A)      | 14.10 | 14.19 | 14.28 | 14.36 | 14.45 |
| Module efficiency                                | 22.0% | 22.3% | 22.5% | 22.8% | 23.0% |

**NMOT:** Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20° C, AM=1.5, Wind Speed 1m/s

|                                                  |       |       |       |       |       |
|--------------------------------------------------|-------|-------|-------|-------|-------|
| Rated output (P <sub>mp</sub> / W <sub>p</sub> ) | 330.9 | 334.6 | 338.4 | 342.2 | 345.9 |
| Rated voltage (V <sub>mp</sub> / V)              | 31.11 | 31.27 | 31.43 | 31.59 | 31.75 |
| Rated current (I <sub>mp</sub> / A)              | 10.64 | 10.70 | 10.77 | 10.83 | 10.90 |
| Open circuit voltage (V <sub>oc</sub> / V)       | 37.04 | 37.23 | 37.42 | 37.61 | 37.80 |
| Short circuit current (I <sub>sc</sub> / A)      | 11.38 | 11.46 | 11.53 | 11.59 | 11.66 |

## Electrical Specifications (Integrated power)

| P <sub>mp</sub> gain | P <sub>mp</sub> / W <sub>p</sub> | V <sub>mp</sub> / V | I <sub>mp</sub> / A | V <sub>oc</sub> / V | I <sub>sc</sub> / A |
|----------------------|----------------------------------|---------------------|---------------------|---------------------|---------------------|
| 5%                   | 473                              | 33.39               | 14.15               | 39.40               | 14.99               |
| 10%                  | 495                              | 33.39               | 14.82               | 39.40               | 15.70               |
| 15%                  | 518                              | 33.39               | 15.50               | 39.40               | 16.42               |
| 20%                  | 540                              | 33.39               | 16.17               | 39.40               | 17.13               |
| 25%                  | 563                              | 33.39               | 16.85               | 39.40               | 17.85               |

Electrical characteristics with different rear power gain (reference to 450W)

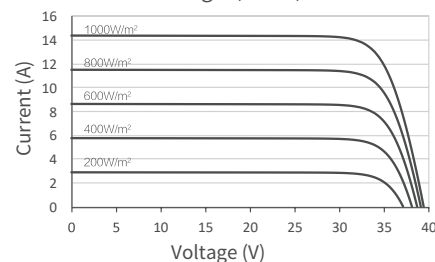
## Temperature Ratings (STC)

## Operating Parameters

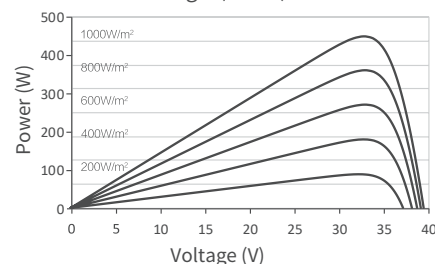
|                                             |            |                              |                     |
|---------------------------------------------|------------|------------------------------|---------------------|
| Temperature coefficient (P <sub>mp</sub> )  | -0.29%/°C  | No. of diodes                | 3                   |
| Temperature coefficient (I <sub>sc</sub> )  | +0.043%/°C | Junction box IP rating       | IP68                |
| Temperature coefficient (V <sub>oc</sub> )  | -0.25%/°C  | Max. series fuse rating      | 30A                 |
| Nominal module operating temperature (NMOT) | 41±2°C     | Max. system voltage (IEC/UL) | 1500V <sub>DC</sub> |

## Curve

Current-Voltage (450W)



Power-Voltage (450W)



Current-Voltage (450W)

