



**panda** 3.0 Pro 1

**660W**

MAXIMUM MODULE EFFICIENCY

**23.6%**

POSITIVE POWER TOLERANCE

**0~+5<sub>w</sub>**



N-type TOPCon Bifacial Module

**IMPROVED POWER  
NEVER SETTLE FOR LESS**



Backside Yield



Wide Applications



Superior Yield



Outstanding Bifaciality



Excellent Durability



Yingli Solar Website



## QUALIFICATIONS & CERTIFICATES

IEC 61215, IEC 61730, CE

ISO 9001: Quality management systems

ISO 14001: Environmental management systems

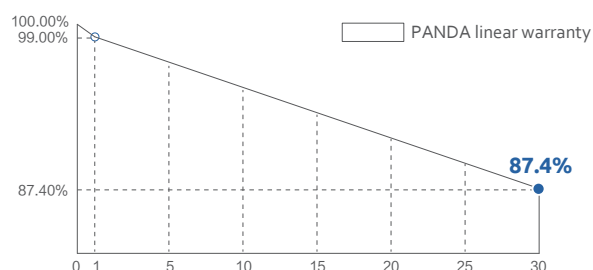
IEC 62941: Quality system for PV module manufacturing

ISO 45001: Occupational health and safety management systems



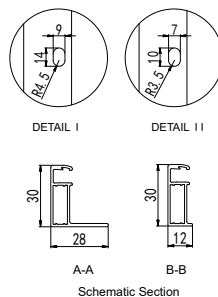
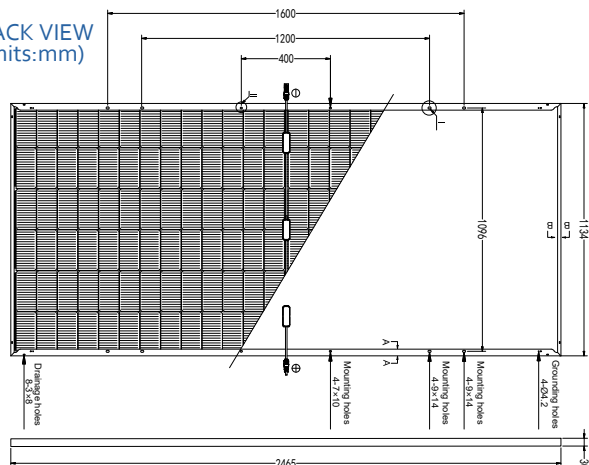
Warranty partner

Munich RE

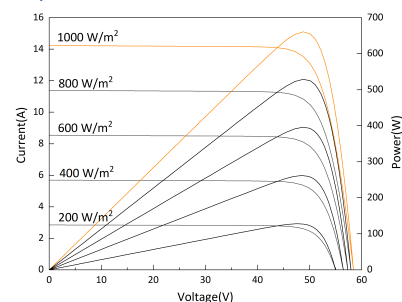


**1.00%** the 1st year power degradation  
**0.40%** annual power degradation

BACK VIEW  
(units:mm)



I-V / P-V CURVES



Warning: Read the Installation and User Manual in its entirety before handling, installing and operating Yingli Solar modules.

## Electrical Parameters at Standard Test Conditions (STC)

|                                            |                          |       |       |       |       |       |
|--------------------------------------------|--------------------------|-------|-------|-------|-------|-------|
| Module type                                | YLxxxCF78 e/2 (xxx=Pmax) |       |       |       |       |       |
| Power output*·Pmax (W)                     | 635                      | 640   | 645   | 650   | 655   | 660   |
| Power output tolerances-ΔPmax (W)          | 0 / + 5                  |       |       |       |       |       |
| Module efficiency-η <sub>m</sub> (%)       | 22.7                     | 22.9  | 23.1  | 23.3  | 23.4  | 23.6  |
| Voltage at Pmax - V <sub>mpp</sub> (V)     | 47.57                    | 47.73 | 47.89 | 48.04 | 48.21 | 48.35 |
| Current at Pmax-I <sub>mpp</sub> (A)       | 13.35                    | 13.41 | 13.47 | 13.53 | 13.59 | 13.65 |
| Open-circuit voltage*·V <sub>oc</sub> (V)  | 57.42                    | 57.62 | 57.82 | 58.02 | 58.22 | 58.42 |
| Short-circuit current*·I <sub>sc</sub> (A) | 14.01                    | 14.05 | 14.10 | 14.14 | 14.19 | 14.23 |

STC: 1000 W·m<sup>-2</sup> irradiance, 25°C cell temperature, AM 1.5. \*Measruing tolerance: ±3%.

## Electrical Parameters at Nominal Operating Cell Temperature (NOCT)

|                                           |       |       |       |       |       |       |
|-------------------------------------------|-------|-------|-------|-------|-------|-------|
| Power output·Pmax (W)                     | 483   | 487   | 491   | 494   | 498   | 502   |
| Voltage at Pmax - V <sub>mpp</sub> (V)    | 45.38 | 45.53 | 45.68 | 45.83 | 45.99 | 46.13 |
| Current at Pmax-I <sub>mpp</sub> (A)      | 10.64 | 10.69 | 10.74 | 10.79 | 10.83 | 10.88 |
| Open-circuit voltage·V <sub>oc</sub> (V)  | 54.53 | 54.72 | 54.91 | 55.10 | 55.29 | 55.48 |
| Short-circuit current-I <sub>sc</sub> (A) | 11.29 | 11.32 | 11.36 | 11.39 | 11.43 | 11.47 |

NOCT: open-circuit module operation temperature at 800 W·m<sup>-2</sup> irradiance, 20°C ambient temperature, 1 m · s<sup>-1</sup> wind speed.

## Bifacial Electrical Parameters at Standard Test Conditions(BNPI)

|                                           |       |       |       |       |       |       |
|-------------------------------------------|-------|-------|-------|-------|-------|-------|
| Power output·Pmax (W)                     | 704   | 709   | 715   | 720   | 726   | 731   |
| Voltage at Pmax - V <sub>mpp</sub> (V)    | 47.57 | 47.73 | 47.89 | 48.04 | 48.21 | 48.35 |
| Current at Pmax-I <sub>mpp</sub> (A)      | 14.79 | 14.86 | 14.92 | 14.99 | 15.06 | 15.12 |
| Open-circuit voltage·V <sub>oc</sub> (V)  | 57.42 | 57.62 | 57.82 | 58.02 | 58.22 | 58.42 |
| Short-circuit current-I <sub>sc</sub> (A) | 15.52 | 15.57 | 15.62 | 15.67 | 15.72 | 15.77 |

BNPI: 1000W·m<sup>-2</sup> on the front side and 135 W·m<sup>-2</sup> on the back side , 25°C cell temperature, AM 1.5.  
Bifaciality coefficient is 80% ± 5%.

## Thermal Characteristics

|                                                        |        |
|--------------------------------------------------------|--------|
| Nominal operating cell temperature-NOCT(°C)            | 42 ± 2 |
| Temperature coefficient of Pmax-γ (% / °C)             | - 0.29 |
| Temperature coefficient of V <sub>oc</sub> -β (% / °C) | - 0.24 |
| Temperature coefficient of I <sub>sc</sub> -α (% / °C) | 0.042  |

## Packaging Specifications

|                                      |                             |
|--------------------------------------|-----------------------------|
| Number of modules per pallet         | 36                          |
| Number of pallets per 40' container  | 16                          |
| Packaging box dimensions (L / W / H) | 2480 mm / 1110 mm / 1245 mm |
| Box weight                           | 1302 kg                     |

## Operating Conditions

|                                             |                              |
|---------------------------------------------|------------------------------|
| Max. system voltage                         | 1500 V <sub>DC</sub>         |
| Max. series fuse rating*                    | 30 A                         |
| Operating temperature range                 | - 40°C~ 85°C                 |
| Max. static load, front (e.g., snow)        | 5400 Pa                      |
| Max. static load, back (e.g., wind)         | 2400 Pa                      |
| Max. hailstone impact (diameter / velocity) | 25 mm / 23 m·s <sup>-1</sup> |

\*Do not connect fuse in combiner box with two or more strings in parallel connection.

## General Characteristics

|                        |                           |
|------------------------|---------------------------|
| Dimensions (L / W / H) | 2465 mm / 1134 mm / 30 mm |
| Weight                 | 34.5 kg                   |

## Construction Materials

|                                         |                                                   |
|-----------------------------------------|---------------------------------------------------|
| Cell ( material / quantity )            | n-type monocrystalline silicon / 6 x 26           |
| Glass (thickness)                       | 2.0 mm / 2.0 mm                                   |
| Frame (material)                        | anodized aluminum alloy                           |
| Junction box (type / protection degree) | 3 bypass diodes / ≥ IP68                          |
| Cable (length / cross-sectional area)   | ± 300 mm or customized length / 4 mm <sup>2</sup> |

•Due to continuous innovation, research and product improvement, the specifications in this product information sheet are subject to change without prior notice.

The specifications may deviate slightly and are not guaranteed.

•The data do not refer to a single module and they are not part of the offer, they only serve for comparison to different module types.



Yingli Solar Website