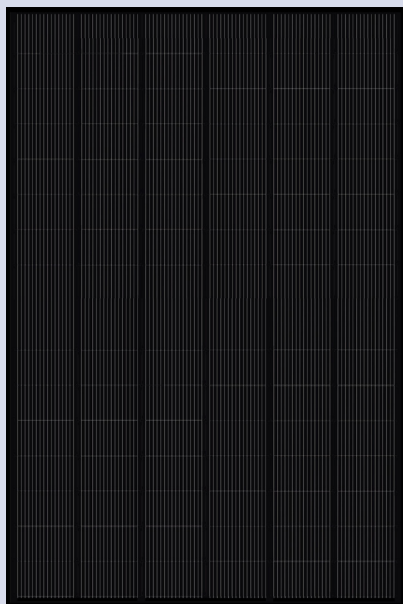


**PANDA 3.0 PRO**  
**425-450 W**  
**FULL BLACK G/G**  
**BIFACIAL**

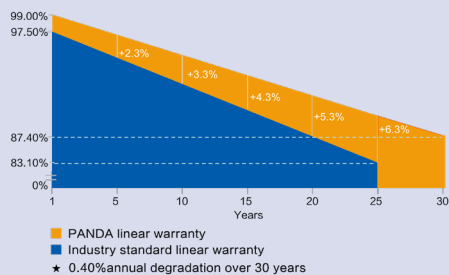


**96 CELL**  
 CELL QUANTITY

**0-5 W**  
 POWER TOLERANCE

**30YEAR**  
 PRODUCT WARRANTY

**30 YEAR**  
 POWER WARRANTY



**IMPROVED POWER**  
**NEVER SETTLE FOR LESS**

PANDA 3.0 modules use the industry's cutting-edge n-type monocrystalline TOPCon cell technology. PANDA 3.0 modules wake up earlier than conventional p-type modules and go to sleep later, with the superimposed excellent features such as bifacial generation, the energy yield can be highest increased by 30%.



**Backside Yield**

The backside of the module effectively uses reflected and scattered light from the environment to generate electricity.



**Superior Yield**

The large size cell enhances the module's power output, with the excellent temperature coefficient, superior low light performance and comprehensive LID/LeTID degradation suppression technology, allows the module to generate more energy yield once in use.



**Excellent Durability**

The modules meet IEC standard testing requirements and are resistant to salt mist, ammonia, dust and sand, snail trail and PID risks.



**Wide Applications**

The glass-glass structure, special material selection and extra-strong frames effectively enhance the mechanical performance of the modules, their compatibility with mainstream trackers and inverters, and their adaptability to harsh environments.



**Outstanding Bifaciality**

The modules have industry-leading bifaciality for bifacial modules.

**QUALIFICATIONS & CERTIFICATES**

IEC 61215, IEC 61730, CE, IEC 62941:2019 Terrestrial photovoltaic (PV) modules—Quality system for PV module manufacturing, ISO 9001:2015 Quality management systems, ISO 14001:2015 Environmental management systems, ISO 45001:2018 Occupational health and safety management systems



Yingli Solar

Headquartered in Baoding, China, Yingli Energy Development Company Limited, known as Yingli Solar, is a leading solar solution provider. Yingli Solar is committed to providing clean, renewable energy through PV power generation technology for factories, homes and utilities around the world. Yingli Solar provides reliable products and services through continuous technological advancement and management innovation. The sun does all the rest.

## Electrical parameters at Standard Test Conditions (STC\*)

| Module type             |                  |   | YLxxxCF48 i/2 (xxx=Pmax) |       |       |       |       |       |
|-------------------------|------------------|---|--------------------------|-------|-------|-------|-------|-------|
| Power output            | $P_{max}$        | W | 425                      | 430   | 435   | 440   | 445   | 450   |
| Power output tolerances | $\Delta P_{max}$ | W | 0 / + 5                  |       |       |       |       |       |
| Module efficiency       | $\eta_m$         | % | 21.27                    | 21.52 | 21.77 | 22.02 | 22.27 | 22.52 |
| Voltage at $P_{max}$    | $V_{mpp}$        | V | 28.99                    | 29.22 | 29.45 | 29.68 | 29.91 | 30.14 |
| Current at $P_{max}$    | $I_{mpp}$        | A | 14.67                    | 14.72 | 14.78 | 14.83 | 14.88 | 14.94 |
| Open-circuit voltage    | $V_{oc}$         | V | 35.21                    | 35.42 | 35.63 | 35.84 | 36.05 | 36.26 |
| Short-circuit current   | $I_{sc}$         | A | 15.34                    | 15.40 | 15.46 | 15.52 | 15.58 | 15.64 |

\*STC: 1000 W · m<sup>-2</sup> irradiance, 25°C cell temperature, AM 1.5 spectrum according to EN 60904-3.

## Electrical parameters at Nominal Operating Cell Temperature (NOCT\*)

|                       |           |   |        |        |        |        |        |        |
|-----------------------|-----------|---|--------|--------|--------|--------|--------|--------|
| Power output          | $P_{max}$ | W | 365.74 | 369.90 | 374.33 | 378.53 | 382.75 | 387.25 |
| Voltage at $P_{max}$  | $V_{mpp}$ | V | 31.01  | 31.26  | 31.50  | 31.75  | 31.99  | 32.24  |
| Current at $P_{max}$  | $I_{mpp}$ | A | 11.79  | 11.83  | 11.88  | 11.92  | 11.96  | 12.01  |
| Open-circuit voltage  | $V_{oc}$  | V | 37.04  | 37.26  | 37.48  | 37.70  | 37.92  | 38.14  |
| Short-circuit current | $I_{sc}$  | A | 12.13  | 12.18  | 12.23  | 12.27  | 12.32  | 12.37  |

\*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 (Rear irradiance is 135 W·m<sup>-2</sup>)

|                       |           |   |        |        |        |        |        |        |
|-----------------------|-----------|---|--------|--------|--------|--------|--------|--------|
| Power output          | $P_{max}$ | W | 471.21 | 476.57 | 482.28 | 487.69 | 493.13 | 498.92 |
| Voltage at $P_{max}$  | $V_{mpp}$ | V | 28.99  | 29.22  | 29.45  | 29.68  | 29.91  | 30.14  |
| Current at $P_{max}$  | $I_{mpp}$ | A | 16.25  | 16.31  | 16.38  | 16.43  | 16.49  | 16.55  |
| Open-circuit voltage  | $V_{oc}$  | V | 35.21  | 35.42  | 35.63  | 35.84  | 36.05  | 36.26  |
| Short-circuit current | $I_{sc}$  | A | 17.00  | 17.06  | 17.13  | 17.20  | 17.26  | 17.33  |

Bifaciality coefficient is 80% ± 5%.

## THERMAL CHARACTERISTICS

|                                      |          |      |        |
|--------------------------------------|----------|------|--------|
| Nominal operating cell temperature   | NOCT     | °C   | 42 ± 2 |
| Temperature coefficient of $P_{max}$ | $\gamma$ | %/°C | -0.30  |
| Temperature coefficient of $V_{oc}$  | $\beta$  | %/°C | -0.25  |
| Temperature coefficient of $I_{sc}$  | $\alpha$ | %/°C | 0.046  |

## OPERATING CONDITIONS

|   |                                |
|---|--------------------------------|
| Max. system voltage                         | 1500 V <sub>DC</sub>           |
| Max. series fuse rating*                    | 30 A                           |
| Operating temperature range                 | -40°C to 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.

## CONSTRUCTION MATERIALS

|   |   |
|---|---|
| Cell ( material / quantity )            | n-type monocrystalline silicon / 6 × 16 |
| Glass (material / thickness)            | 1.6 mm / 1.6 mm                         |
| Frame (material)                        | anodized aluminum alloy                 |
| Junction box (type / protection degree) | 3 bypass diodes / ≥ IP68                |
| Cable (length / cross-sectional area)   | ± 1200 mm / 4 mm <sup>2</sup>           |

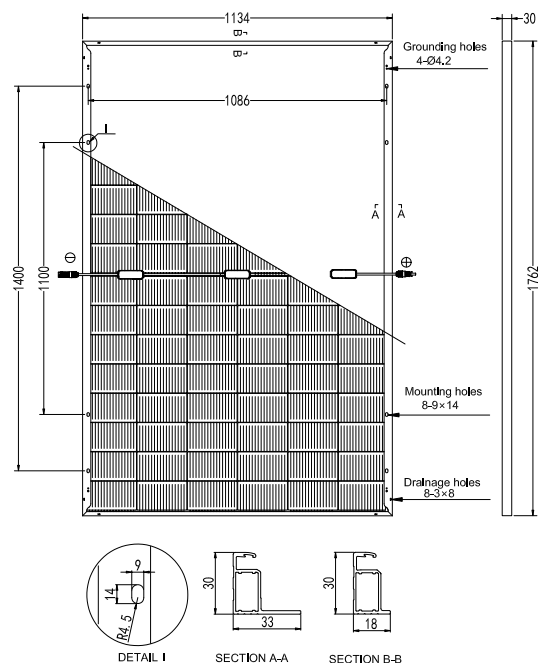
## GENERAL CHARACTERISTICS

|                        |                           |
|------------------------|---------------------------|
| Dimensions (L / W / H) | 1762 mm / 1134 mm / 30 mm |
| Weight                 | 21.0 kg                   |

## PACKAGING SPECIFICATIONS

|                                      |                             |
|--------------------------------------|-----------------------------|
| Number of modules per pallet         | 36                          |
| Number of pallets per 40' container  | 26                          |
| Packaging box dimensions (L / W / H) | 1780 mm / 1110 mm / 1245 mm |
| Box weight                           | 793 kg                      |

## BACK VIEW (units: mm)



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

- 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.
- The 30 Year Product Warranty only for the solar module dispatched to Densys PV5 GmbH.

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