



panda 3.0 Mini 1

440W

MAXIMUM MODULE EFFICIENCY

22.5%

POSITIVE POWER TOLERANCE

0~+5_w



N-type TOPCon Bifacial Module

IMPROVED POWER NEVER SETTLE FOR LESS

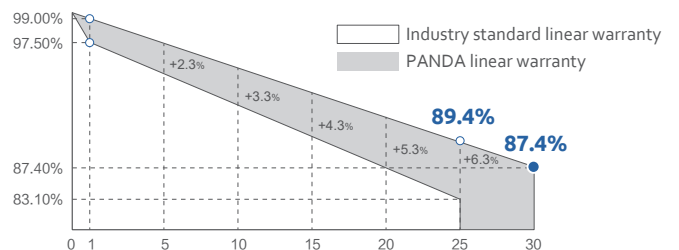
- Backside Yield
- Wide Applications
- Superior Yield
- Outstanding Bifaciality
- Excellent Durability



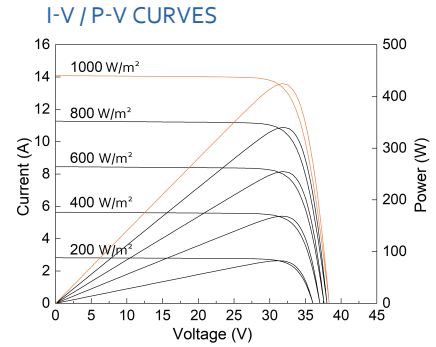
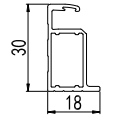
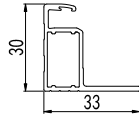
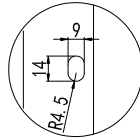
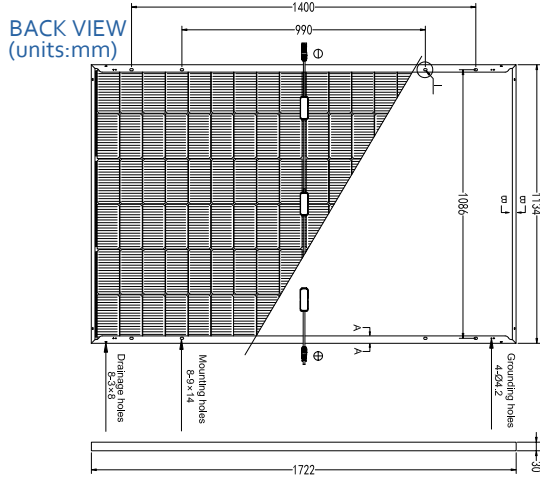
Yingli Solar Website

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



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



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 | YLxxxCF54 e/2 (xxx=Pmax) | | | | | |
|---|--------------------------|-------|-------|-------|-------|-------|
| Power output-Pmax (W) | 415 | 420 | 425 | 430 | 435 | 440 |
| Power output tolerances-ΔPmax (W) | 0 / + 5 | | | | | |
| Module efficiency-η _m (%) | 21.3 | 21.5 | 21.8 | 22.0 | 22.3 | 22.5 |
| Voltage at Pmax - V _{mpp} (V) | 31.32 | 31.51 | 31.70 | 31.89 | 32.08 | 32.27 |
| Current at Pmax-I _{mpp} (A) | 13.26 | 13.33 | 13.41 | 13.49 | 13.56 | 13.64 |
| Open-circuit voltage-V _{oc} (V) | 37.94 | 38.13 | 38.32 | 38.51 | 38.69 | 38.87 |
| Short-circuit current-I _{sc} (A) | 13.97 | 14.03 | 14.09 | 14.15 | 14.22 | 14.29 |

*STC: 1000 W·m⁻² irradiance, 25°C cell temperature, AM 1.5.

Electrical Parameters at Nominal Operating Cell Temperature (NOCT*)

| | | | | | | |
|---|-------|-------|-------|-------|-------|-------|
| Power output-Pmax (W) | 316 | 319 | 323 | 327 | 331 | 335 |
| Voltage at Pmax - V _{mpp} (V) | 29.88 | 30.06 | 30.24 | 30.42 | 30.60 | 30.78 |
| Current at Pmax-I _{mpp} (A) | 10.57 | 10.63 | 10.69 | 10.76 | 10.81 | 10.87 |
| Open-circuit voltage-V _{oc} (V) | 36.03 | 36.21 | 36.39 | 36.57 | 36.74 | 36.91 |
| Short-circuit current-I _{sc} (A) | 11.26 | 11.30 | 11.35 | 11.40 | 11.46 | 11.51 |

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

Bifacial Electrical Parameters at Standard Test Conditions(BNPI*)

| | | | | | | |
|---|-------|-------|-------|-------|-------|-------|
| Power output-Pmax (W) | 460 | 465 | 471 | 477 | 482 | 488 |
| Voltage at Pmax - V _{mpp} (V) | 31.32 | 31.51 | 31.70 | 31.89 | 32.08 | 32.27 |
| Current at Pmax-I _{mpp} (A) | 14.69 | 14.77 | 14.86 | 14.95 | 15.02 | 15.11 |
| Open-circuit voltage-V _{oc} (V) | 37.94 | 38.13 | 38.32 | 38.51 | 38.69 | 38.87 |
| Short-circuit current-I _{sc} (A) | 15.48 | 15.55 | 15.61 | 15.68 | 15.76 | 15.83 |

*1000W·m⁻² on the front side and 135 W·m⁻² 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 Voc-β (% / °C) | - 0.24 |
| Temperature coefficient of I _{sc} -α (% / °C) | 0.042 |

Packaging Specifications

| | |
|--------------------------------------|-----------------------------|
| Number of modules per pallet | 36 |
| Number of pallets per 40' container | 26 |
| Packaging box dimensions (L / W / H) | 1740 mm / 1110 mm / 1245 mm |
| Box weight | 778 kg |

Construction Materials

| | |
|---|---|
| Cell (material / quantity) | n-type monocrystalline silicon / 6 x 18 |
| Glass (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 ² |

•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.

Operating Conditions

| | |
|---|------------------------------|
| Max. system voltage | 1500 V _{DC} |
| 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 ⁻¹ |

General Characteristics

| | |
|------------------------|---------------------------|
| Dimensions (L / W / H) | 1722 mm / 1134 mm / 30 mm |
| Weight | 20.6 kg |



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