



panda 3.0 Plus 1

650W

MAXIMUM MODULE EFFICIENCY

23.0%

POSITIVE POWER TOLERANCE

0~+5_w



N-type TOPCon Bifacial Module

**IMPROVED POWER
NEVER SETTLE FOR LESS**

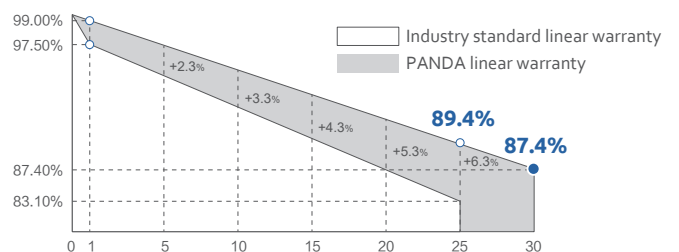
- Backside Yield
- Wide Applications
- Superior Yield
- Outstanding Bifaciality
- Excellent Durability



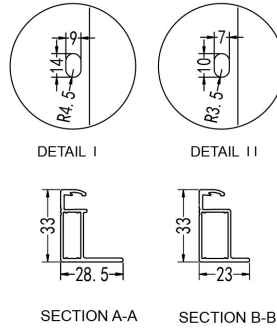
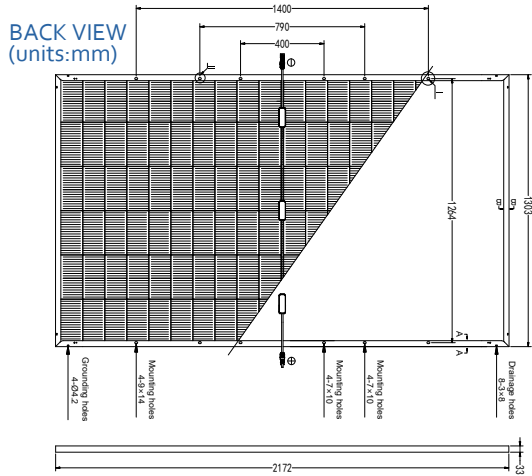
Yingli Solar Website

QUALIFICATIONS & CERTIFICATES

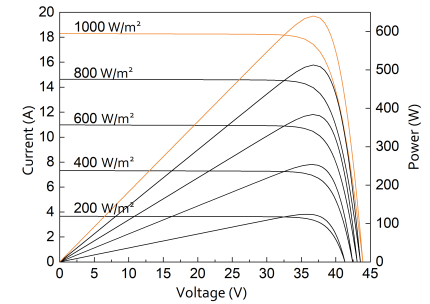
- IEC 61215, IEC 61730, CE
- ISO 9001: Quality management systems
- ISO 14001: Environmental management systems
- IEC 62941: Quality system for PV module manufacturing
- ISO 45001: Occupational health and safety management systems



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



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	YLxxxCF60 f/2 (xxx=Pmax)	625	630	635	640	645	650
Power output-Pmax (W)		625	630	635	640	645	650
Power output tolerances-ΔPmax (W)		0 / + 5					
Module efficiency-η _m (%)		22.1	22.3	22.4	22.6	22.8	23.0
Voltage at Pmax - V _{mpp} (V)		36.59	36.73	36.86	37.00	37.14	37.27
Current at Pmax-I _{mpp} (A)		17.09	17.16	17.23	17.30	17.37	17.45
Open-circuit voltage-V _{oc} (V)		43.36	43.55	43.73	43.91	44.09	44.27
Short-circuit current-I _{sc} (A)		18.18	18.22	18.26	18.30	18.34	18.38

*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)	476	479	483	487	491	495
Voltage at Pmax - V _{mpp} (V)	34.90	35.04	35.16	35.30	35.43	35.55
Current at Pmax-I _{mpp} (A)	13.63	13.68	13.74	13.79	13.85	13.91
Open-circuit voltage-V _{oc} (V)	41.18	41.36	41.53	41.70	41.87	42.04
Short-circuit current-I _{sc} (A)	14.65	14.68	14.71	14.74	14.78	14.81

*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)	693	698	704	709	715	721
Voltage at Pmax - V _{mpp} (V)	36.59	36.73	36.86	37.00	37.14	37.27
Current at Pmax-I _{mpp} (A)	18.94	19.01	19.09	19.17	19.25	19.33
Open-circuit voltage-V _{oc} (V)	43.36	43.55	43.73	43.91	44.09	44.27
Short-circuit current-I _{sc} (A)	20.14	20.19	20.23	20.28	20.32	20.37

*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	33
Number of pallets per 40' container	17
Packaging box dimensions (L / W / H)	1340 mm / 1140 mm / 2290 mm
Box weight	1194 kg

Construction Materials

Cell (material / quantity)	n-type monocrystalline silicon / 6 x 20
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 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*	35 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)	2172 mm / 1303 mm / 33 mm
Weight	34.6 kg



Yingli Solar Website