

# PANDA 3.0 PRO

## 455-480 W

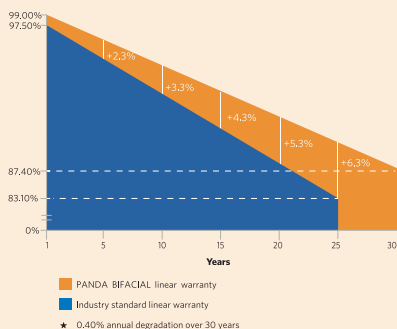


120 CELLS

0-5 W  
POWER TOLERANCE

12-YEAR  
PRODUCT WARRANTY

30-YEAR  
POWER WARRANTY



# DUAL POWER

## MAXIMISED YIELD

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 excellent superimposed features such as bifacial generation, the energy yield can be increased by up to 30%.



### Backside Yield

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



### Superior Yield

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



### Excellent Durability

The modules meet IEC standard testing requirements and are built to withstand the harsh Australian environment.



### 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 a bifaciality coefficient of up to 85%.

## 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 homes, factories and utilities around the world. Yingli Solar provides reliable products and services through continuous technological advancement and management innovation.

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

Module type	YLxxxCF60 e/2 (xxx=Pmax)							
Power output	$P_{max}$	W	455	460	465	470	475	480
Power output tolerances	$\Delta P_{max}$	W	0 / + 5					
Module efficiency	$\eta_m$	%	21.08	21.32	21.55	21.78	22.01	22.24
Voltage at $P_{max}$	$V_{mpp}$	V	34.90	35.10	35.30	35.50	35.70	35.90
Current at $P_{max}$	$I_{mpp}$	A	13.04	13.11	13.18	13.24	13.31	13.38
Open-circuit voltage	$V_{oc}$	V	41.80	42.00	42.20	42.40	42.60	42.80
Short-circuit current	$I_{sc}$	A	13.88	13.94	14.00	14.06	14.12	14.18

\*STC: 1000 W·m<sup>-2</sup> irradiance, 25°C cell temperature, AM 1.5 spectrum according to EN 60904-3. Measurement tolerance of  $P_{max}$ ,  $V_{oc}$  and  $I_{sc}$  is ±3%.

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

Power output	$P_{max}$	W	345.51	349.35	353.22	356.84	360.75	364.68
Voltage at $P_{max}$	$V_{mpp}$	V	33.23	33.42	33.61	33.80	33.99	34.19
Current at $P_{max}$	$I_{mpp}$	A	10.40	10.45	10.51	10.56	10.61	10.67
Open-circuit voltage	$V_{oc}$	V	39.62	39.81	40.00	40.19	40.38	40.57
Short-circuit current	$I_{sc}$	A	11.19	11.24	11.29	11.34	11.38	11.43

\*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 (STC\*)

Power output	$P_{max}$	W	504.25	509.86	515.50	520.78	526.49	532.22
Voltage at $P_{max}$	$V_{mpp}$	V	34.90	35.10	35.30	35.50	35.70	35.90
Current at $P_{max}$	$I_{mpp}$	A	14.45	14.53	14.60	14.67	14.75	14.83
Open-circuit voltage	$V_{oc}$	V	41.80	42.00	42.20	42.40	42.60	42.80
Short-circuit current	$I_{sc}$	A	15.38	15.45	15.51	15.58	15.64	15.71

\*Bifaciality coefficient is 80% ± 5%, rear irradiance is 135 W·m<sup>-2</sup>.

## 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 x 20
Glass (material / thickness)	low-iron semi-tempered glass / 2.0 mm (front), 2.0 mm (back)
Frame (material)	anodised aluminum alloy
Junction box (type / protection degree)	3 bypass diodes / ≥ IP68
Plug connector (type)	Staubli EVO2 or Yitong YT18-01 or Renhe RHC2
Cable (length / cross-sectional area)	± 300 mm or customized length / 4 mm <sup>2</sup>

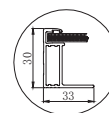
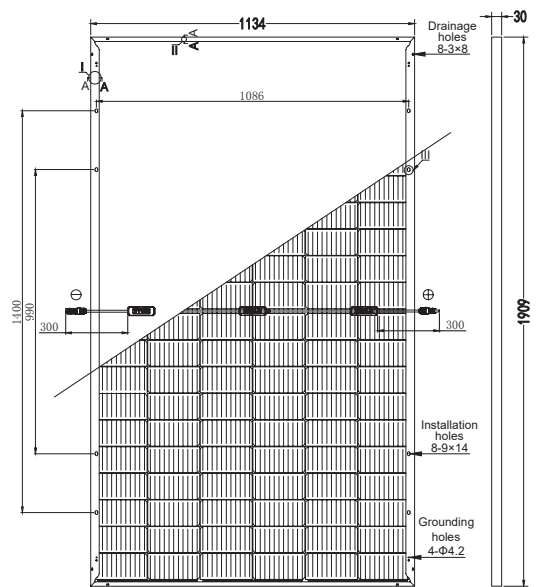
## GENERAL CHARACTERISTICS

Dimensions (L / W / H)	1909 mm / 1134 mm / 30 mm
Weight	27.4 kg
Fire resistance rating	Class A

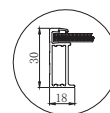
## PACKAGING SPECIFICATIONS

Number of modules per pallet	36
Number of pallets per 40' container	24
Packaging box dimensions (L / W / H)	1921 mm / 1110 mm / 1245 mm
Box weight	1037 kg

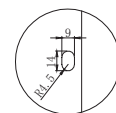
## BACK VIEW (units: mm)



SECTION A-A I



SECTION A-A II



Enlarge figure III



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 does not refer to a single module and only serves as a comparison to different module types.

Proudly manufactured in China.

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