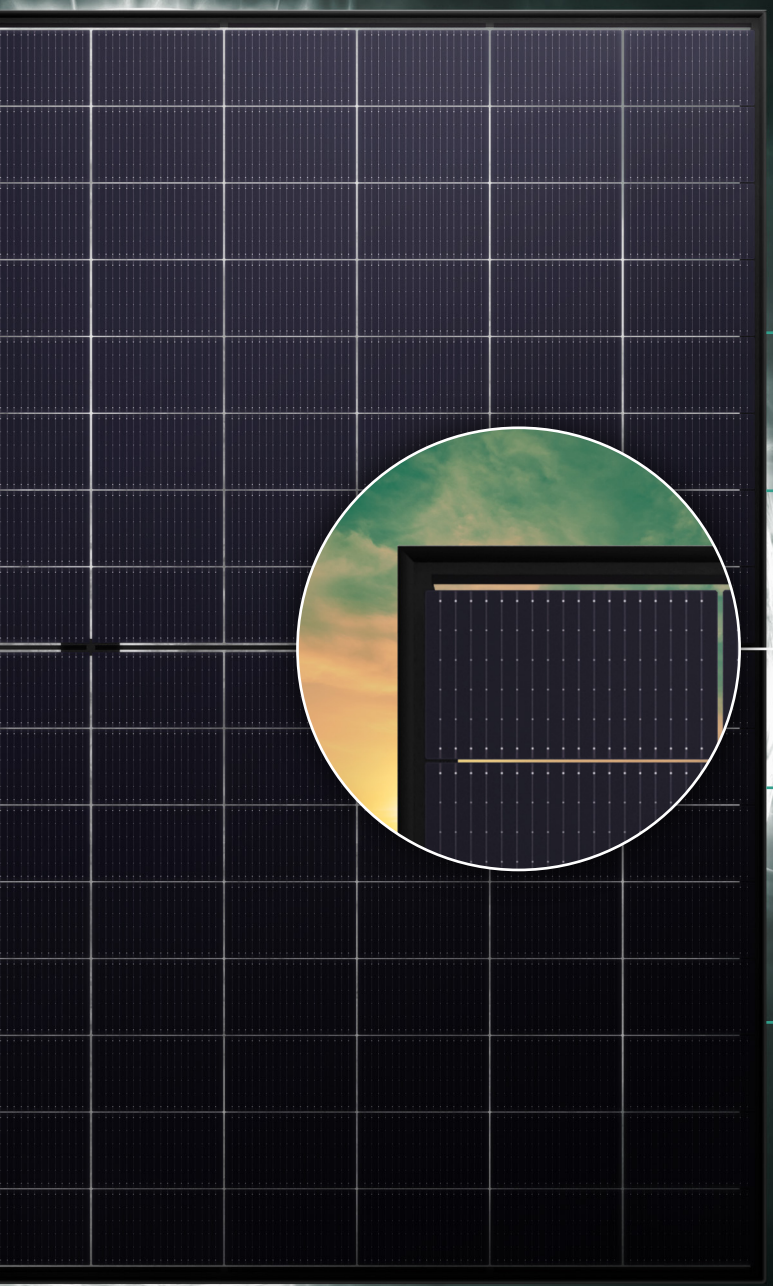
PHONO

Helios | CLEAR

Engineered to Thrive in Australia



5 Design Decisions to Make a Difference

1. HJT Hybrid Cells Combine the Best of Modern Solar Technology
2. More Power Per Panel: Up to 22.02% Efficiency for maximum savings
3. Transparent Dual Glass Design for Enhanced Durability
4. More Power for Decades with Lower Degradation
5. More Warranted Power for your Solar Investment:

30 Year Product Warranty*

30 Year Performance Warranty

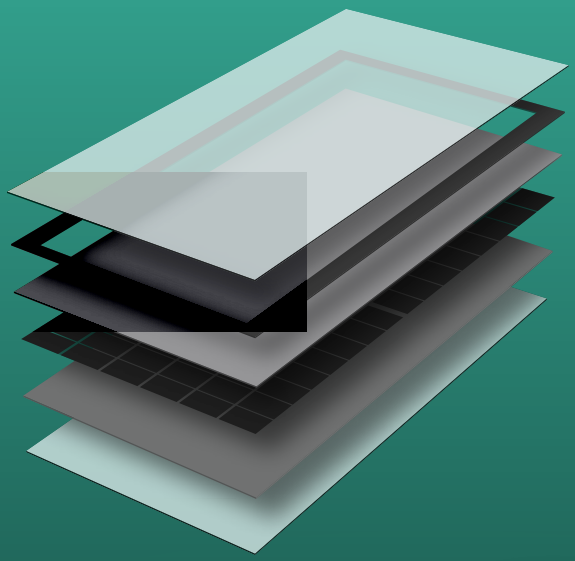
440W | Dual Glass Transparent Bi-Facial N.HJT

Helios | CLEAR

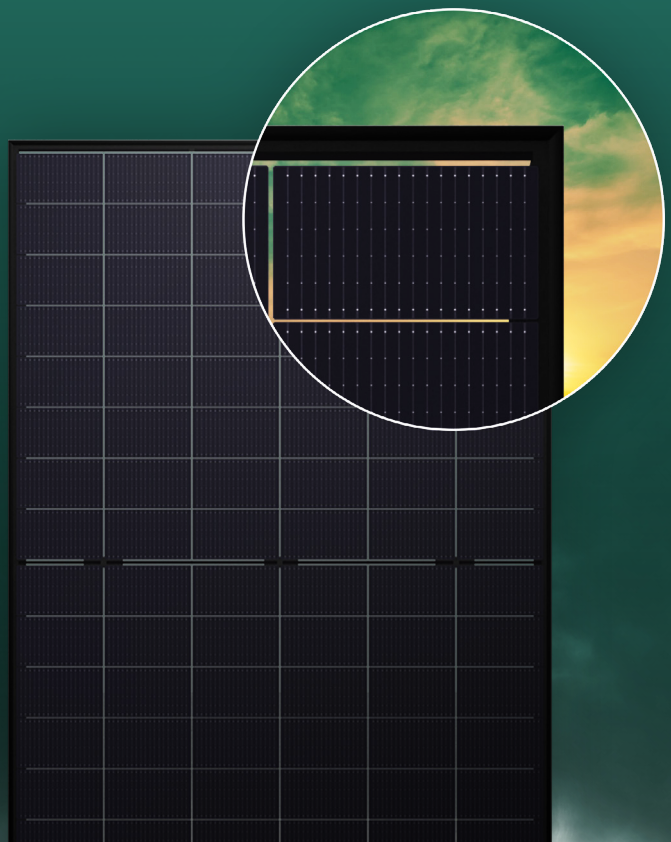
1 Five Layers for Harvesting More Energy

Heterojunction solar cells use a three-layered structure to harvest more. One crystalline N-type silicon wafer surrounded by two thin amorphous silicon layers that we then protect with two layers of toughened glass.

This design boosts efficiency up to 22.02% by capturing at each layer. The top layer harvests bonus sunlight before it reaches the crystalline layer, and the lower layer absorbs any light that passes through.



1. Toughened Glass
2. Amorphous Silicon Layers
3. **N-Type Mono Wafer**
4. Amorphous Silicon Layers
5. Toughened Glass



2 Higher Power Density at the Hottest Times

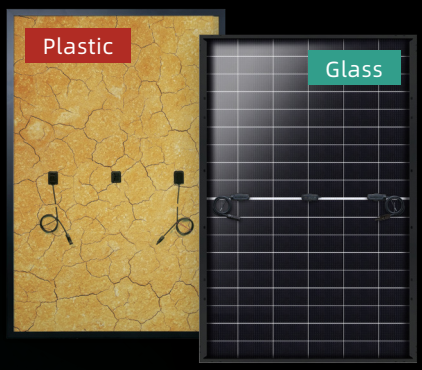
- **4% MORE** Power than PERC *(standard cell technology)*
- HJT Cells have world leading efficiency
- Outstanding power temperature coefficient of **-0.24%/ °C** provides greater performance in hotter conditions

3 Transparent Dual Glass Design

Solar Panels have a major warranty issue in Australia because plastic solar panel backsheets degrade.

Dual Glass replaces the plastic backsheet with **Glass**.

Phono were Pioneers in Engineering Dual Glass Design for Australian Residential Applications.



4 More Power for Decades with Lower Degradation

- 30-year linear performance warranty to 88.1% at year 30

5 Warranty

30 Year
Product Warranty*

30 Year
Performance Warranty

Make a secure investment

4 Layers of protection

Electrifying your Australian home with solar is critical to reducing your power bills and achieving green goals as a nation.

From Manufacturer to installer, we are invested in your secure solar future. Sumec is guaranteeing this longevity with 30 year manufacturer warranties.

1 SUMEC → 2 PHONO → 3 Supply Partners → 4 Your Installer → Customer

Confidence of Longevity

- Founded in 1978
- Sinomach - Fortune Global 500 Company
- Diverse Manufacturer

In Australia
- ODM powertools and mowers for Australias two largest hardware chains

International
- Car parts Mercedes/ BMW
- Cargo Ships

Longevity in Australia

- Pioneered **Dual Glass** and **HJT Hybrid Cells** for Australia
- Bloomberg Tier 1 Brand
- Introduced in Australia in 2010
- Australian Warranty Support and Representation

BLUE CHIP Solar Panel

Australian Front Line Warranty Support To Phono Solar

- Australian Owned Technical Distributor
- 10 Years Importing Phono Solar
- Recognised as an EUPD Top PV Supplier in Australia for 7 straight years.

EUPD RESEARCH TOP PV SUPPLIER WHOLESALE AUSTRALIA 2024

Experienced, Accredited Installers

- Only premium installers sell Phono Solar
- Completed install guidelines for Phono modules to Australian Standards
- CEC Accredited Installer and Designer

Unmatched Reliability

30 Year Product Warranty

30 Year Performance Warranty

Engineered for Australian Conditions

80% of Australians live close to the coast and solar modules for Australia need to be engineered for varying harsh conditions.

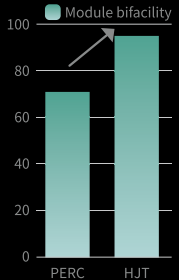
Salt Mist Certification
To the Highest Severity Level

Cyclone Tested
Rated for strong Wind Regions like NT

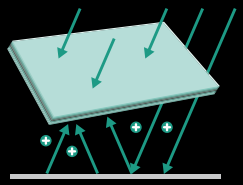
Increased Hail Testing
For increased resilience

Dual Glass & Bifacial Technology

Bifacial solar panels absorb power from the front and the back of the solar panel. Up to **25% more power yield** can be gained in optimal install conditions.



Higher Bifaciality Performance with HJT



Power generation increased further by **3 - 6%** with HJT compared to previous Bifacial PERC Technology.

Electrical Typical Values

Model	PS**440**L12GFH-16/QSH	
Testing Condition	**STC**	**NOCT**
Rated Power (Pmpp)	440	337
Rated Current (Impp)	14.48	11.58
Rated Voltage (Vmpp)	30.39	29.10
Short Circuit Current (Isc)	15.18	12.14
Open Circuit Voltage (Voc)	36.42	34.89
Module Efficiency (%)	22.02	

STC (Standard Testing Conditions): Irradiance 1000W/m², AM 1.5, Cell Temerature 25°C. NOCT (Nominal Operation Cell Temperature): Irradiance 800W/m², Ambient Temperature 20°C, Spectra at AM1.5, Wind at 1m/s

Mechanical Characteristics

Cell Type	HJT Monocrystalline
Dimension (L × W × H)	Length: 1762mm
	Width: 1134mm
	Height: 30mm
Weight	22.0kg
Glass	1.6mm/1.6mm toughened glass
Frame	Anodized Aluminium Alloy
Cable (Including Connector)	1100mm
Junction Box	IP 68 Rated
Connectors	EVO2 Connector, MC4

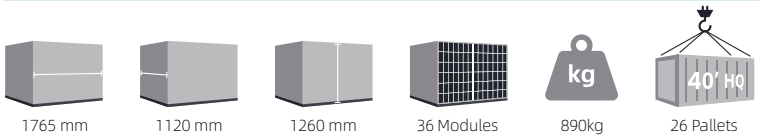
Temperature Ratings

Voltage Temperature Coefficient	-0.22%/°C
Current Temperature Coefficient	+0.04%/°C
Power Temperature Coefficient	**-0.24%/°C**
Power Tolerance	0~+3%
NOCT	44±2°C
Bifaciality	**85±5%**

Absolute Maximum Rating

Operating Temperature	From -40 to + 85°C
Hail Diameter @ 97.9km/h	Up to 35mm
Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Maximum Series Fuse Rating	30A
PV Module Classification	Class II
Maximum System Voltage	DC 1500V

Packing Configuration



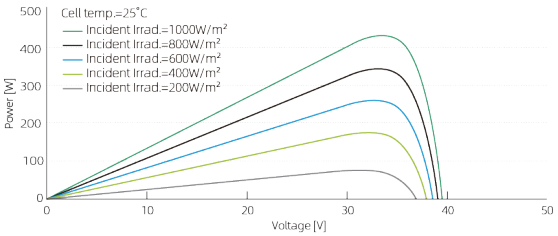
1765 mm | 1120 mm | 1260 mm | 36 Modules | 890kg | 26 Pallets

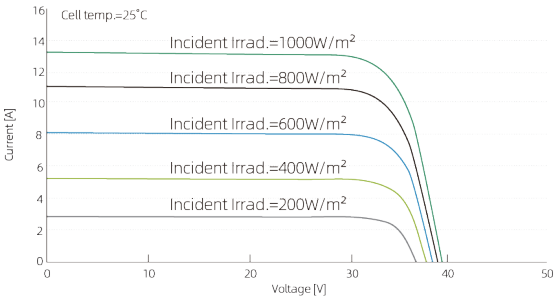
Bifacial Electrical Values

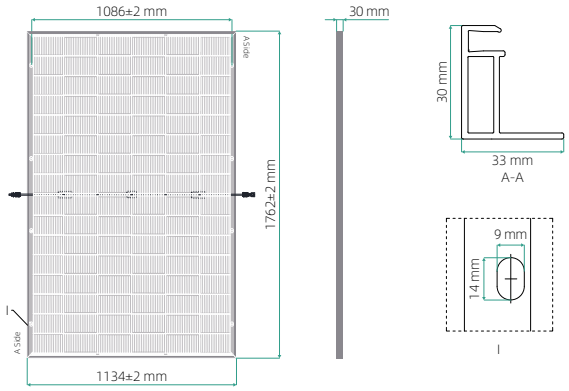
	440
Maximum Power (Pmax)	490
Optimum Operating Current (Impp)	16.12
Optimum Operating Voltage (Vmpp)	30.39
Short Circuit Current (Isc)	17.1
Open Circuit Voltage (Voc)	36.42

BSTC: Front side irradiation 1000W/m², back side reflection irradiation 135W/m², AM 1.5, ambient temperature 25°C

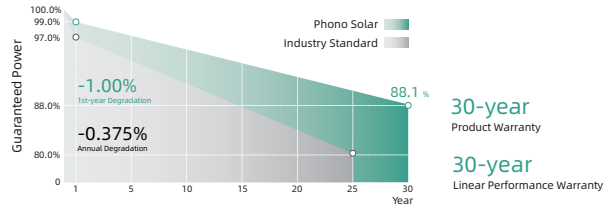
Electrical Characteristics







Linear Performance Warranty



30-year
Product Warranty

30-year
Linear Performance Warranty

30-year linear performance warranty to 88.1% at year 30. This amounts to 1% degradation in the first year, 0.375% annually. | *30 year Product Warranty applies to Residential System Installations. Commercial System Installations are eligible for 25 year Product Warranty. Please see our warranty document for full terms, conditions and details.

PHONO SOLAR TECHNOLOGY CO., LTD. reserves the right to make necessary adjustments to the information described herein at any time without further notice. The specifications and certificates contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. Please be sure to use the most recent version of data.

Manufactured In China
Engineered for Australia

TIER1 Bloomberg