



## Engineered in Australia for Australian Conditions

**choice**  
THE PEOPLE'S WATCHDOG



### A Secure & Reliable Investment

Tindo Solar has extended the product warranty of our Karra panels by an additional 13 years, from 12 years to 25 years.



### Great Visual Appearance

The Tindo Karra series has been designed with appearance in mind. Their deep black cells, with black frames and thinner wires give an aesthetically pleasing appearance.



### High Efficiency

Higher module conversion efficiency (up to 18.9%) benefit from Passivated Emitter Rear Contact (PERC) technology.



### Proven Field Performance

Our panels are mounted and performing everyday at the Desert Knowledge Testing Centre in Alice Springs. The Karra series panels are consistently one of the highest performing panels at the centre. [www.dkasolarcentre.com.au](http://www.dkasolarcentre.com.au)



### Maximum Cost Reductions

Much lower logistics costs due to our modules being made in South Australia with flexible module numbers per pallet on request.



### Innovative All Weather Technology

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



### Low-light Performance

Advanced glass and solar cell surface texturing allow for excellent performance in low-light environment.

Tindo Operations Co Pty Ltd  
1300 846 367  
[www.tindosolar.com](http://www.tindosolar.com)  
6 Second Avenue Mawson Lakes SA 5095



Authorised Reseller  
**tindo**  
solar

# Karra Series Data Sheet

## Electrical Characteristics

60Cells Panel Description		Karra-295		Karra-300		Karra-310		Karra-315	
Item	Unit	*STC	**NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Max. Power (Pmax)	W	295	216.15	300	219.81	310	277.15	315	230.82
Max. Power voltage (Vmp)	V	32.56	29.56	32.93	29.90	33.66	30.56	34.02	30.89
Max. Power current (Imp)	A	9.06	7.31	9.11	7.35	9.21	7.43	9.26	7.47
Open circuit voltage (Voc)	V	39.80	36.72	40.10	37.00	40.70	37.55	41.00	37.83
Short circuit current (Isc)	A	9.60	7.82	9.65	7.86	9.75	7.94	9.80	7.98
Panel efficiency	%	17.7	13.0	18.0	13.2	18.6	13.6	18.9	13.8
Positive Power Class Sorting	W	0 + ~ 5							

STC(Standard Test Condition) : 1,000W/m<sup>2</sup>, AM 1.5, 25 ° C // \*\*NMOT: Nominal Module Operating Temperature : 800W/m<sup>2</sup>, 20°C, wind speed 1m/s,  
Tolerance of Pmax, VOC & ISC ±3% within each watt class at STC

## Thermal Characteristics

Rating		Unit	Value
Measurement of *NMOT		°C	44
Temperature Coefficient	Isc	%/°C	+ 0.045
	Voc	%/°C	- 0.292
	Pmax	%/°C	- 0.410

\*NMOT: Nominal Module Operating Temperature

## Qualification Test

Thermal cycling test	- 40 °C to 85 °C for 200 cycles
Damp heat test	85 °C and 85% relative humidity for 1000hr
Front load test	Test load 2400 Pa / Design load 1600 Pa
Rear load test	Test load 3600 Pa / Design load 2400 Pa
Hail impact test	25mm hail at 23m/s from 1m distance

Safety factor of \*static load test: 1.5 (Test load = Design load x Safety factor)

## Mechanical Characteristics

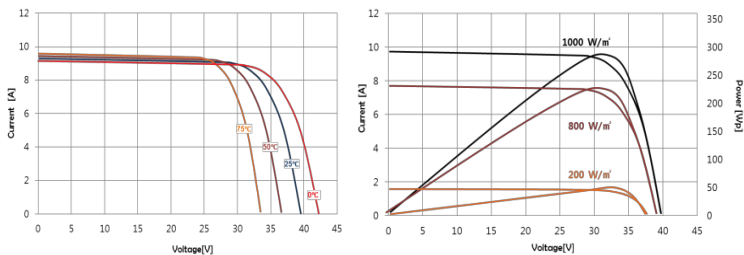
Cells per Panel	60Cells (6 x 10)
Cell Type	5BB PERC Mono-crystalline
Panel Dimension (L x W x H)	1667 x 1000 x 40 mm
Panel Weight	18 Kg
Front Glass	3.2mm Tempered ARC Glass
Back Sheet	Tedlar film-based /Dupont or PVDF film
Frame	Anodized Black Aluminum
Junction Box	3 bypass diode / IP67
Output cable	(+, -) 1,000mm / 4mm <sup>2</sup> cable
Connectors type	PV-KST4-EVO 2 (male), PV-KBT4-EVO 2 (female) / Staubli - MC4
Edge seal & J-box Sealant	Alkoxy Silicone

## Safety Ratings & Warranties

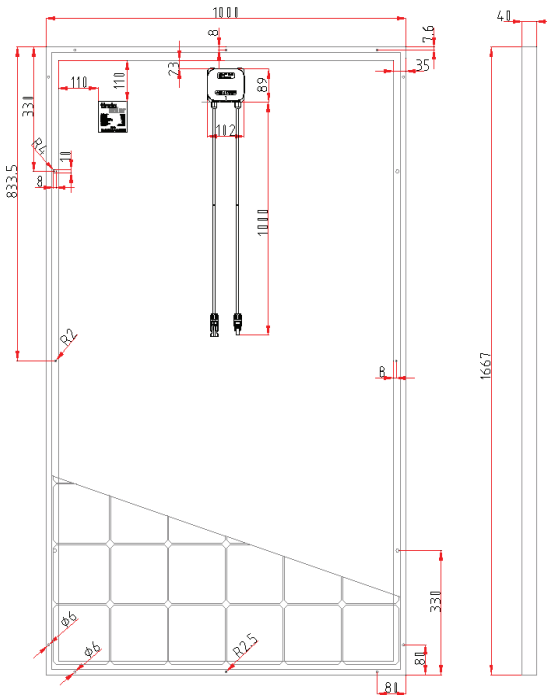
Safety application class	Class A
Fire Safety Classification	Class C
Certifications	IEC 61215, IEC 61730
Warranty	25 years limited product warranty
Performance guarantee	25 years limited warranty 80% power

## System Integration Parameters

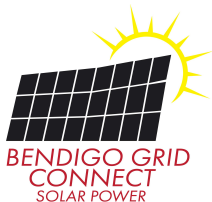
Temperature range	-40°C to 85°C
Maximum system voltage	1,000 V DC(IEC)
Maximum over-current protection	15 A



### [I-V Curves for 300]



[Panel Diagram]



Authorised Reseller  
**tindo**  
solar

Tindo Operations Co Pty Ltd  
1300 846 367  
[www.tindosolar.com](http://www.tindosolar.com)  
6 Second Avenue Mawson Lakes SA 5095