# Tindo Karra 400P Mono PERC
## Mono-Crystalline Module



## Engineered in Australia
## for Australian Conditions

**AUSTRALIAN MADE AND OWNED**

TÜV SÜD

CLEAN ENERGY COUNCIL
APPROVED SOLAR RETAILER

DESERT KNOWLEDGE AUSTRALIA
Solar Centre
Demonstrated System Performance

### A Secure & Reliable Investment
Tindo Solar has extended the product warranty of our Karra panels by an additional 2 years, from 10 years to 12 years.

### Great Visual Appearance
The Tindo Kara 400P Solar Panels incorporates Full Square Mono PERC Cells (G1-158.75mm) and has been designed with appearance in mind. The black square cells, with black frames and thinner wires give an aesthetically pleasing appearance.

### High Efficiency and Performance
Featuring 72 solar cells and a 20.1% module efficiency, the Tindo Karra 400P mono solar panel
(square mono PERC) generates more power output than conventional mono-crystalline solar panels.
The Tedlar® based backsheets used in this module provide critical, long-life protection, safeguarding the system and enabling long-term PV system returns. In harsh climates, it offers the best protection from UV, thermal, moisture, mechanical and chemical stress.

### 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

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

### Project Flexibility
We have also updated our traditional MC4 connectors on the Karra 400P module to MC4-EVO 2 Staubli connectors increasing the panels rating to 1500V making it ideal for both commercial and residential applications.

### PID Resistance
Polyolefin Encapsulant is superior to the traditional EVA encapsulant used in solar panels. As a result the panel is more PID resistant, it is more inert which prevents corrosion, it has better UV protection giving the module better lifespan and it has better thermo-mechanical properties for better performance in the field.

### Low-light Performance
Advanced glass and solar cell surface texturing allow for optimal yields, whatever the weather with excellent low-light and temperature behaviour. (98% @200W/m2 irradiance)

tindo solar

# Karra Series Data Sheet

## Electrical Characteristics

| 72 Cell Module | | Karra-400P |
|---|---|---|
| Item | Unit | *STC |
| Max. Power (Pmax) | Wp | 400 |
| Max. Power voltage (Vmp) | V | 40.24 |
| Max. Power current (Imp) | A | 9.94 |
| Open circuit voltage (Voc) | V | 49.32 |
| Short circuit current (Isc) | A | 10.42 |
| Panel efficiency | % | 20.1 |
| Positive power tolerance | W | 0 + ~ 5 |

*STC (Standard Test Condition): 1,000 W/m$^2$ , AM 1.5, 25°C.
Tolerance of Pmax, Vo &Isc $\pm$ 3% within each watt class at STC.

## Qualification Test

| | |
|---|---|
| Thermal cycling test | - 40°C to 85°C for 200 cycles |
| Damp heat test | 85°C and 85% relative humidity for 1000 hr |
| Mechanical Load test | 5400Pa (Front) / 2400Pa (Rear) |
| PID test | -1500 V DC, 96 h, 85 % RH, 85˚C |
| 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

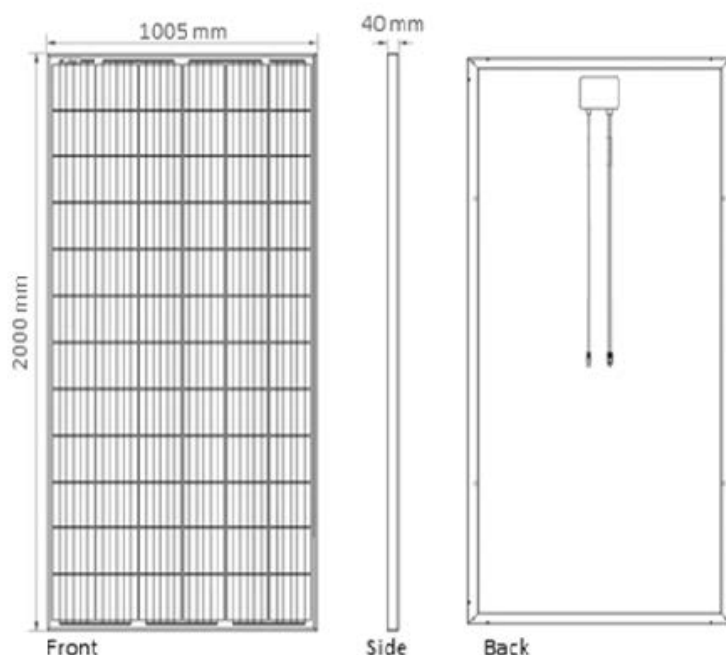| | |
|---|---|
| Cells per panel | 72 Cells (6x12) |
| Cell Type | 5BB PERC Mono-crystalline |
| Panel Dimension (Lx Wx Hx) | 2000 x 1005 x 40mm |
| Panel Weight | 22 Kg |
| Front Glass | 3.2mm Tempered ARC Glass |
| Frame | Black Anodized Aluminium |
| Junction Box | With bypass diode / IP67 ($\geq$1.2M/4mm$^2$) |
| Connector Type | KST4-EV02(M), KBT4-EVO2(F) /Stabli-MC4 |
| Backsheet | Tedlar® based backsheets |
| Encapsulant | Polyolefin Encapsulant |

## System Integration Parameters

| | |
|---|---|
| Temperature Range | -40°C to 85°C |
| Maximum System Voltage | 1,500V DC(IEC) |
| Maximum over-current protection | 15 A |

## Thermal Characteristics

| Rating | | Unit | Value |
|---|---|---|---|
| *NMOT | | °C | 44 |
| Temperature Coefficient | Isc | %/°C | +0.06 |
| | Voc | %/°C | - 0.30 |
| | Pmax | %/°C | -0.37 |

NMOT: Nominal Module Operating Temperature

## Safety Ratings & Warranties

| | |
|---|---|
| Safety Application Class | Class II |
| Fire Safety Classification | Class C |
| Certifications | IEC 61215 , IEC 61730 |
| Warranty | 12 years limited product warranty |
| Performance Guarantee | 25 years limited warranty 80% power |

## Packaging

| | |
|---|---|
| Stacking Method | Horizontal / Palletised |
| Panels per Pallet | 25 |
| Pallet Dimensions & Weight | 2050x1050x1200, 480kg |
| Pallets & Panels per 20-ft container | 10 Pallets - 235 Panels |
| Pallets & Panels per 40-ft container high cube | 22 Pallets - 550 Panels |

[Panel Diagram]