

Empowering  
*Solar Living*

Product Catalogue



SUN is the only energy source, which still continues to operate without any sign of decline. Kalthia Group diversified its wing toward **225 MW state-of-the-art manufacturing excellence** under the brands **KOSOL** and **SunRay**. KOSOL covers the products and services like Solar PV Modules, Solar Roof Top, EPC Solar Solution Provider, Solar Power Plant, Solar Lights, Solar Water Pumping Systems etc., and SunRay covers Domestic, Commercial & Industrial Solar Water Heating applications.

Today KOSOL Energie is India's foremost brand in solar industry with path-breaking solar solutions with aim to create a green energy revolution, by developing products that helps to achieve freedom from dependency on fossil fuel based energy. We called this phenomenon as **Empowering Solar Living...**

**POLY Series : 40 Wp – 480 Wp**



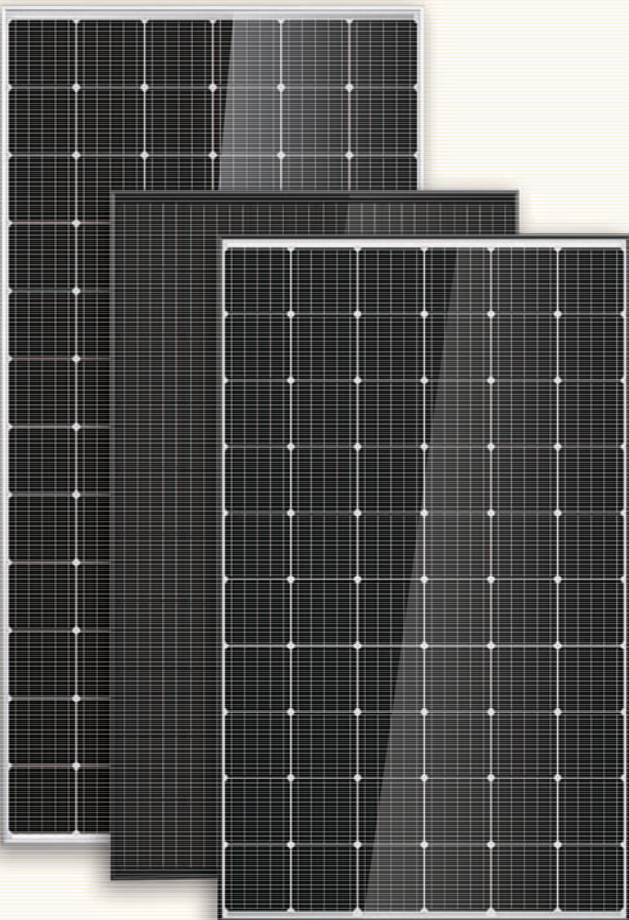
# Shaping Future Technologies

KOSOL Energie is an ISO 9001:2015, 14001:2015 & 18001:2007 certified leading organization in India having 225 MW production capacity, where we innovate to create and empower the world with functional products to harness and employ clean and green solar energy.

KOSOL provides solutions for solar photovoltaic systems and solar heating water under one roof with in-house R&D facility. Exceeding the high standards and commitment to excellence, our solar products are accepted in domestic as well as overseas markets like in US, Mexico, Africa, Middle East.

We offer a broad selection of Polycrystalline and Monocrystalline solar modules on grid / off grid connected systems. Our solar modules are certified to FIRE RATING TYPE-1, IEC 61215/61730/61701, 62804, UL 1703, CEC for crystalline modules and conforming to International standards. Our modules are guaranteed with 5 years warranty for manufacturing defects and performance linear power warranty for 25 years with 2.5% for first year degradation and 0.82% from year 2 to 25.

## MONO Series : 50 Wp – 540 Wp



**HIGH CONVERSION**  
**EFFICIENT** Photo Voltaic  
 Modules based on  
**State-of-the art European**  
**manufacturing technology**



Upto +3 Wp  
**POSITIVE POWER**  
**OUTPUT TOLERANCE**  
**GUARANTEED** ensuring  
 return on investment

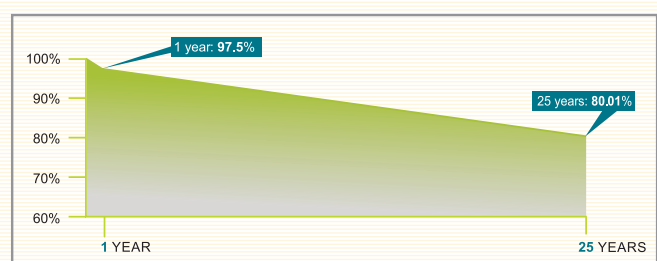


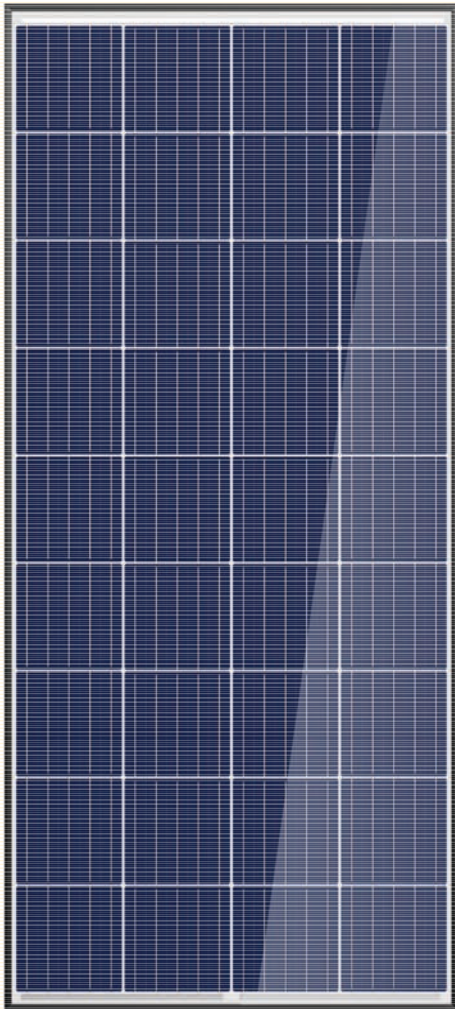
Extremely **RELIABLE**  
**PRODUCT** withstands  
 high wind pressure  
 and snow load and  
 temperature variations



**RIGOROUS**  
**QUALITY CONTROL**  
 meeting the highest  
 International standards

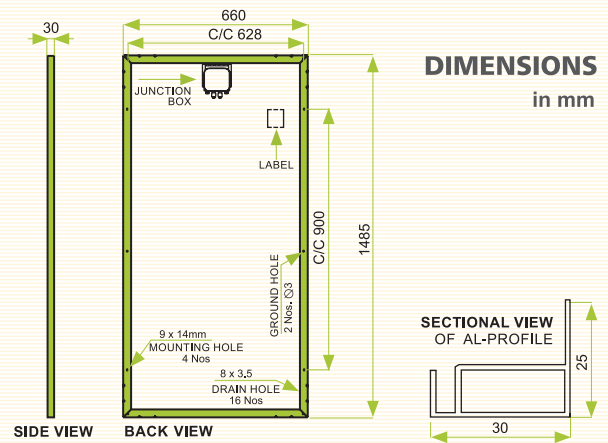
### PERFORMANCE WARRANTY





# Mercury Poly Series

## Polycrystalline Solar PV Modules 36 Cells | 5 BB



### TECHNICAL SPECIFICATIONS - (P Series Module)

TYPE	KE 40	KE 50	KE 60	KE 75	KE 100	KE 150	KE 160	KE 170
Pmp/W*	40	50	60	75	100	150	160	170
Imp/A	2.58	2.67	3.2	4.01	6.38	8.17	8.50	8.86
Vmp/V	18.78	18.78	18.2	18.78	18.03	18.53	18.90	19.10
Isc/A	2.36	2.81	3.36	4.22	6.811	8.64	9.03	9.29
Voc/V	22.42	22.42	22.57	22.508	22.125	22.21	22.75	23.11
Module (LxWxH)	455x660x30	525x660x30	605x660x30	785x660x30	1140x660x30	1485x660x30	1485x660x30	1485x660x30
Weight	3.3	4	5	5.6	8	10	10	10

Mercury Poly Series is also available with customised sizes and specifications subject to volume.

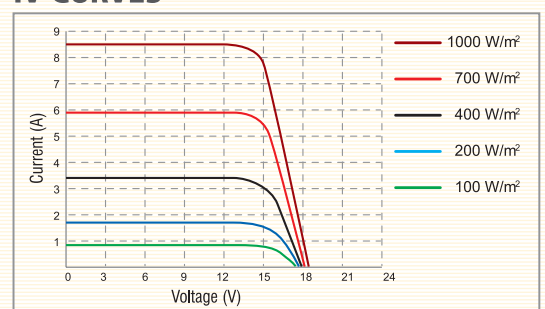
### THERMAL PARAMETERS

Tc of Open Circuit Voltage	- 0.36% / °C
Tc of Short Circuit Current	0.06% / °C
Tc of Power	- 0.36% / °C
Maximum System Voltage	600 V - 1000 V
NOCT	45 °C ± 2 °C
Operating Range	- 40 °C to +85 °C

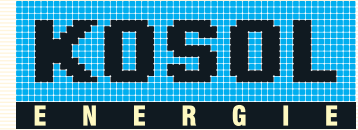
### MECHANICAL DATA

Junction Box	IP67
Cable and Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A (upto 36 cells)

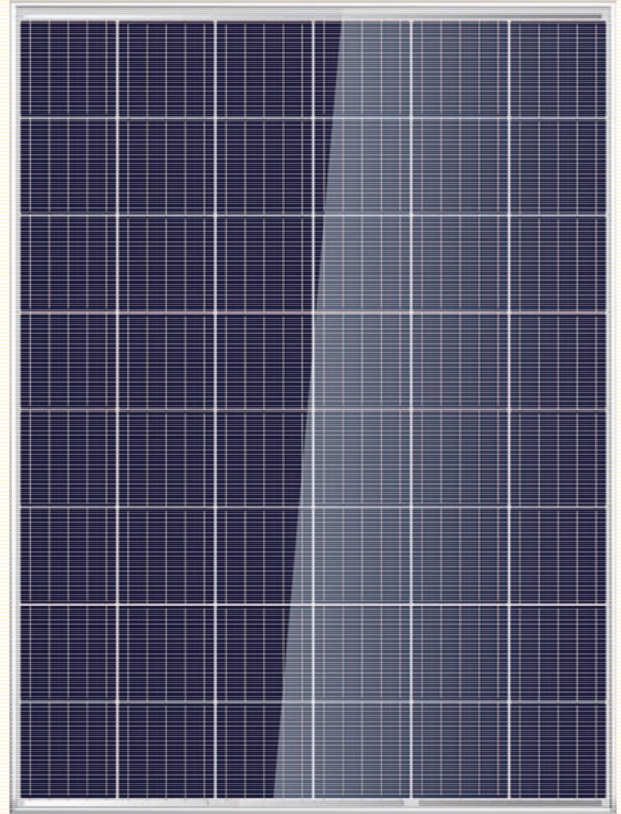
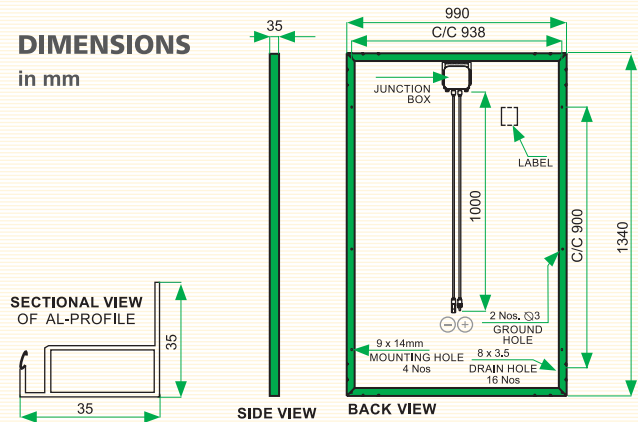
### IV CURVES



# Mars Poly Series



## Polycrystalline Solar PV Modules 48 Cells | 5 BB



### TECHNICAL SPECIFICATIONS - (P Series Module)

TYPE	KE 210	KE 215	KE 220	KE 225
Pmp/W*	210	215	220	225
Imp/A	8.43	8.56	8.69	8.82
Vmp/V	25.13	25.34	25.55	25.76
Isc/A	8.9	9.03	9.16	9.29
Voc/V	30.1	30.34	30.58	30.82

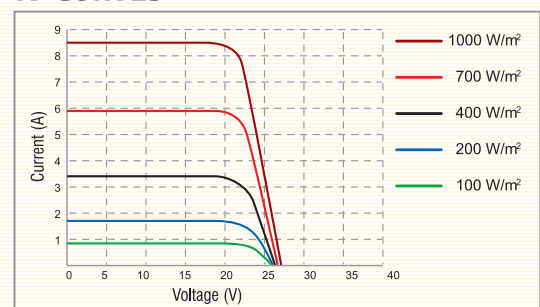
### THERMAL PARAMETERS

Tc of Open Circuit Voltage	-0.36% / °C
Tc of Short Circuit Current	0.06% / °C
Tc of Power	-0.36% / °C
Maximum System Voltage	600 V - 1000 V - 1500 V
NOCT	45 °C ± 2 °C
Operating Range	- 40 °C to +85 °C

### MECHANICAL DATA

L x W x H (mm)	1340 x 990 x 35
Weight	14.2 kg
Junction Box	IP67
Cable and Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A

### IV CURVES

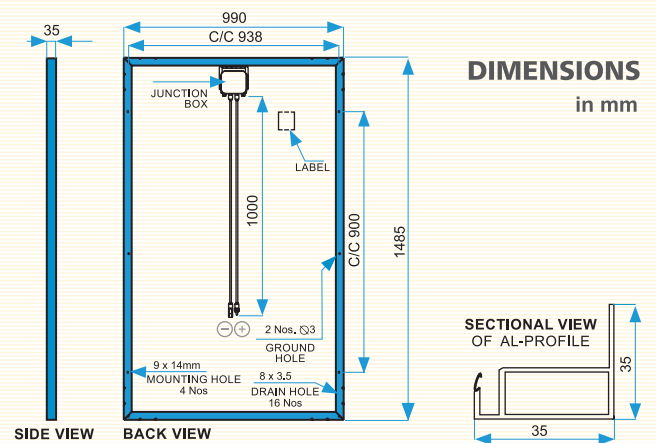
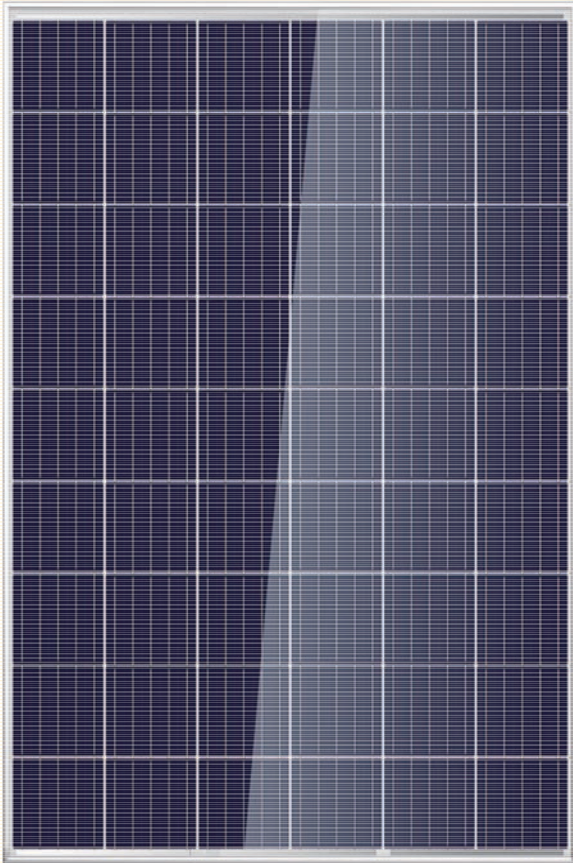


\* STC: 1000 w/m<sup>2</sup>, 25 °C, AM 1.5

The specifications are for reference purpose only. KOSOL reserves the right to change the specifications without prior notice.

# Venus Poly Series

## Polycrystalline Solar PV Modules 54 Cells | 5BB



### TECHNICAL SPECIFICATIONS - (P Series Module)

TYPE	KE 235	KE 240	KE 245	KE 250	KE 255
Pmp/W*	235	240	245	250	255
Imp/A	8.41	8.53	8.65	8.77	8.89
Vmp/V	28.2	28.4	28.6	28.8	29.0
Isc/A	8.88	9	9.12	9.24	9.36
Voc/V	33.78	34.01	34.24	34.47	34.7

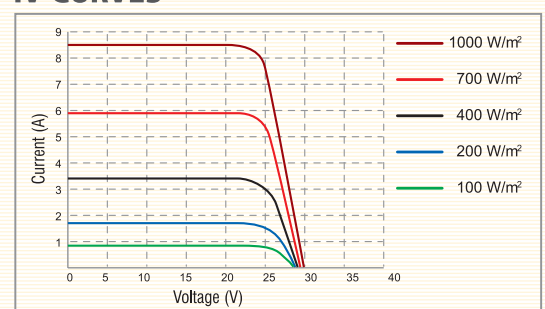
### THERMAL PARAMETERS

Tc of Open Circuit Voltage	- 0.36% / °C
Tc of Short Circuit Current	0.06% / °C
Tc of Power	- 0.36% / °C
Maximum System Voltage	600 V - 1000 V - 1500 V
NOCT	45 °C ± 2 °C
Operating Range	- 40 °C to +85 °C

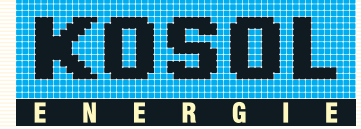
### MECHANICAL DATA

L x W x H (mm)	1485 × 990 × 35
Weight	15.5 kg
Junction Box	IP67
Cable and Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A

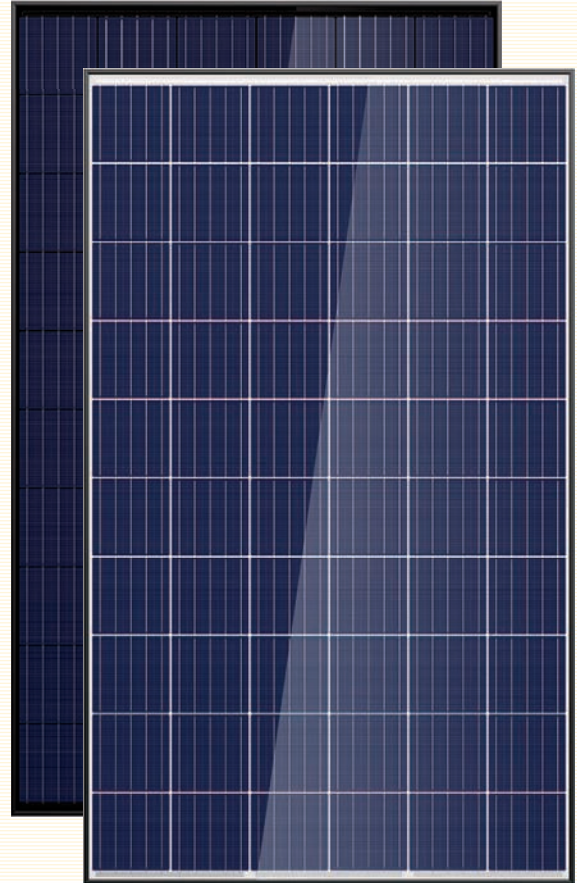
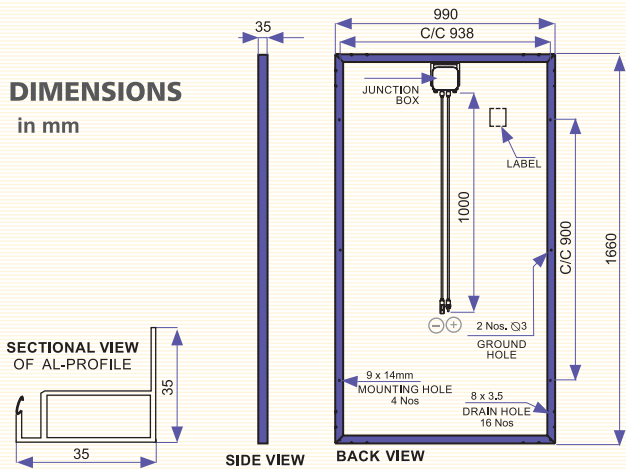
### IV CURVES



# Earth Poly Series



## Polycrystalline Solar PV Modules 60 Cells | 5BB



### TECHNICAL SPECIFICATIONS - (P Series Module)

TYPE	KE 260	KE 265	KE 270	KE 275	KE 280	KE 285	KE 290	KE 295	KE 300
Pmp/W*	260	265	270	275	280	285	290	295	300
I <sub>mp</sub> /A	8.5	8.61	8.73	8.84	8.92	9.02	9.11	9.21	9.3
V <sub>mp</sub> /V	30.7	30.9	31.0	31.2	31.5	31.65	31.85	32.05	32.25
I <sub>sc</sub> /A	9.0	9.15	9.22	9.32	9.40	9.49	9.57	9.66	9.74
V <sub>oc</sub> /V	37.5	37.7	37.9	38.1	38.2	38.4	38.6	38.7	38.9

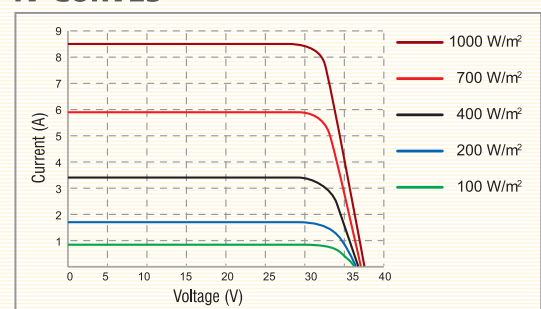
### THERMAL PARAMETERS

T <sub>c</sub> of Open Circuit Voltage	- 0.36% / °C
T <sub>c</sub> of Short Circuit Current	0.06% / °C
T <sub>c</sub> of Power	- 0.36% / °C
Maximum System Voltage	600 V - 1000 V - 1500 V
NOCT	45 °C ± 2 °C
Operating Range	- 40 °C to +85 °C

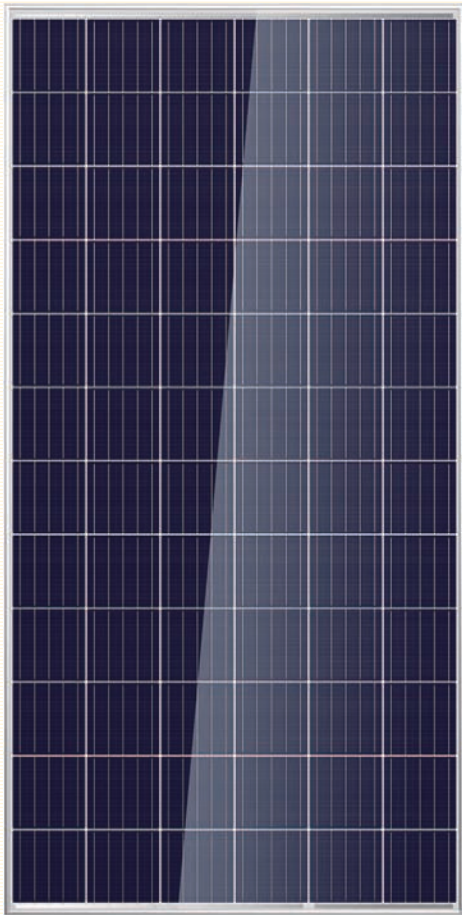
### MECHANICAL DATA

L x W x H (mm)	1660 x 990 x 35
Weight	18.5 kg
Junction Box	IP67
Cable & Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A

### IV CURVES

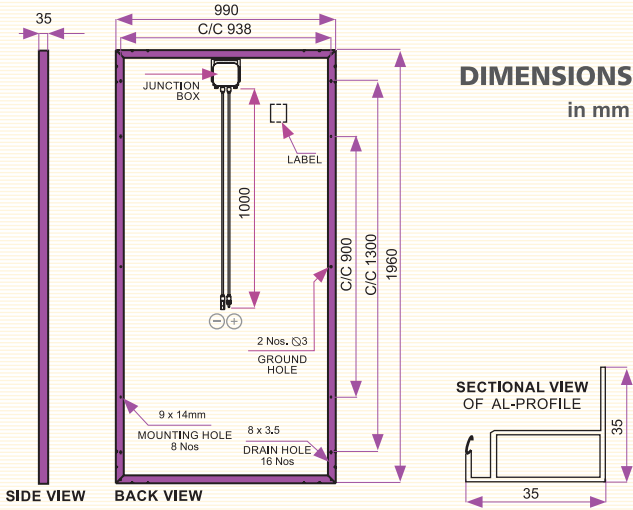


\* STC: 1000 w/m<sup>2</sup>, 25 °C, AM 1.5



# Neptune Poly Series

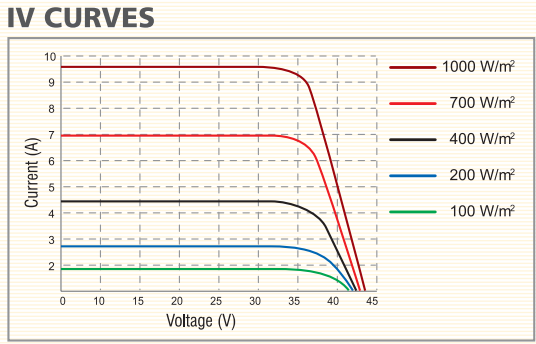
## Polycrystalline Solar PV Modules 72 Cells | 5 BB



TECHNICAL SPECIFICATIONS - (P Series Module)										
TYPE	KE 315	KE 320	KE 325	KE 330	KE 335	KE 340	KE 345	KE 350	KE 355	KE 360
Pmp/W*	315	320	325	330	335	340	345	350	355	360
I <sub>mp</sub> /A	8.51	8.63	8.73	8.83	8.91	8.99	9.07	9.15	9.23	9.31
V <sub>mp</sub> /V	37.2	37.2	37.3	37.5	37.7	37.9	38.1	38.3	38.5	38.7
I <sub>sc</sub> /A	9	9.15	9.19	9.28	9.35	9.42	9.49	9.56	9.63	9.7
V <sub>oc</sub> /V	45.6	45.5	45.6	45.8	46.0	46.2	46.4	46.6	46.8	47.0

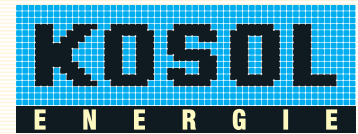
THERMAL PARAMETERS	
Tc of Open Circuit Voltage	- 0.36% / °C
Tc of Short Circuit Current	0.06% / °C
Tc of Power	- 0.36% / °C
Maximum System Voltage	600 V - 1000 V - 1500 V
NOCT	45 °C ± 2 °C
Operating Range	- 40 °C to +85 °C

MECHANICAL DATA	
L x W x H (mm)	1960 x 990 x 35
Weight	20.5 kg
Junction Box	IP67
Cable & Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A



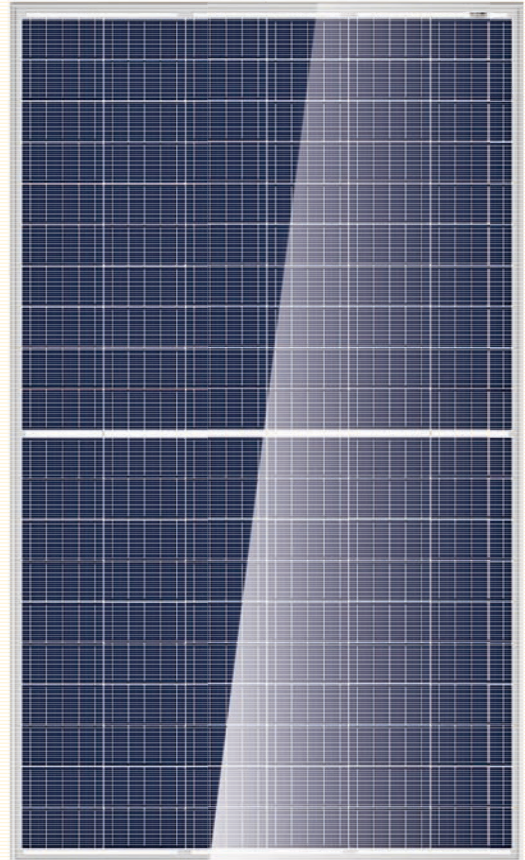
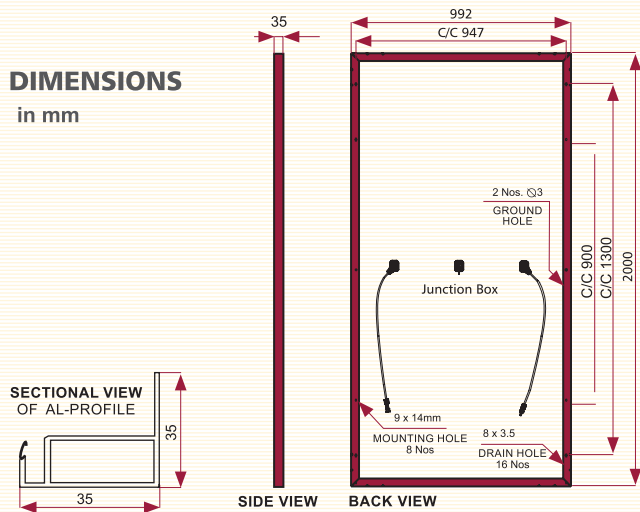


# Saturn Poly Split Cell Series



## Polycrystalline Solar PV Module Framed 144 Half-cut Cell

### DIMENSIONS in mm



### TECHNICAL SPECIFICATIONS - (PX Series Module)

TYPE	KE 335	KE 340	KE 345	KE 350	KE 355	KE 360
Pmp/W*	335	340	345	350	355	360
Imp/A	8.96	9.05	9.14	9.23	9.32	9.7
Vmp/V	37.4	37.6	37.8	38.0	38.2	38.4
Isc/A	9.45	9.50	9.55	9.60	9.65	9.41
Voc/V	45.9	46.1	46.3	46.5	46.7	46.9

STC: Irradiance 1000 W/m<sup>2</sup>, Cell Temperature 25 °C, Air Mass AM1.5

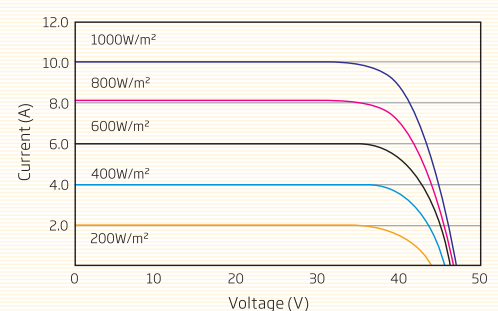
### THERMAL PARAMETERS

Tc of Open Circuit Voltage	-0.36% / °C
Tc of Short Circuit Current	0.06% / °C
Tc of Power	-0.36% / °C
Maximum System Voltage	1000 V - 1500 V
NOCT	45 °C ± 2 °C
Operating Range	-40 °C to +85 °C

### MECHANICAL DATA

L x W x H (mm)	2008 X 1002 X 35
Weight	22.5 kg
Junction Box	IP67
Cable & Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A

### IV CURVES OF PV MODULE (345W)

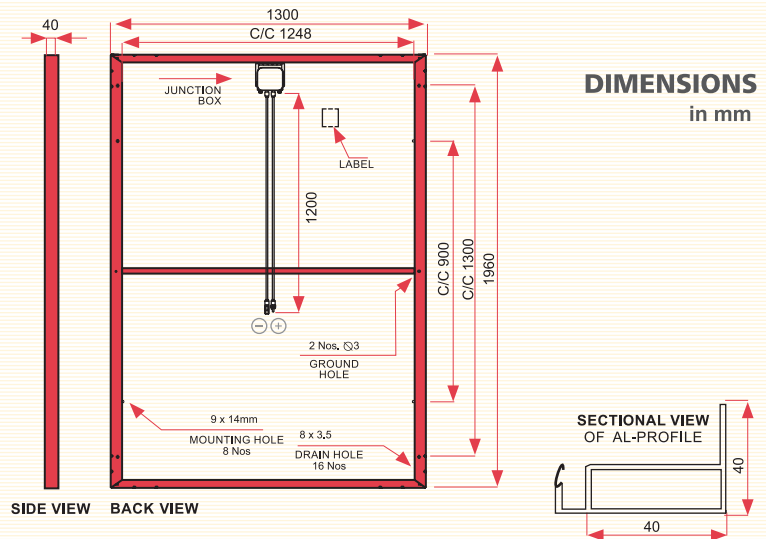
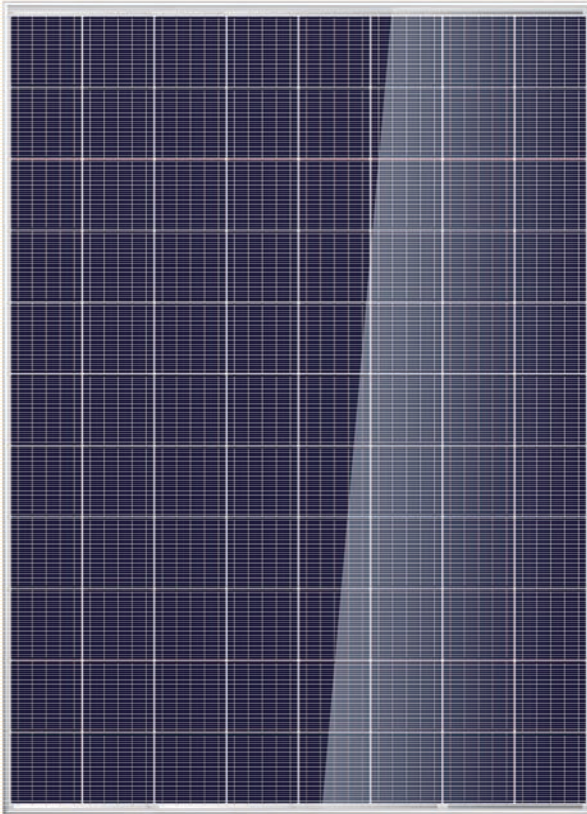


\* STC: 1000 w/m<sup>2</sup>, 25 °C, AM 1.5

The specifications are for reference purpose only. KOSOL reserves the right to change the specifications without prior notice.

# Uranus Poly Series

## Polycrystalline Solar PV Modules 96 Cells | 5 BB



### TECHNICAL SPECIFICATIONS - (P Series Module)

TYPE	KE 420	KE 425	KE 430	KE 435	KE440	KE 450	KE 460	KE 470	KE 480
Pmp/W*	420	425	430	435	440	450	460	470	480
Imp/A	8.46	8.53	8.59	8.66	8.73	8.86	9.0	9.13	9.26
Vmp/V	49.96	50.14	50.32	50.49	50.66	51.01	51.36	51.71	52.06
Isc/A	8.93	9	9.07	9.14	9.21	9.35	9.49	9.63	9.77
Voc/V	61.52	61.59	61.66	61.73	61.8	61.94	62.08	62.22	62.36

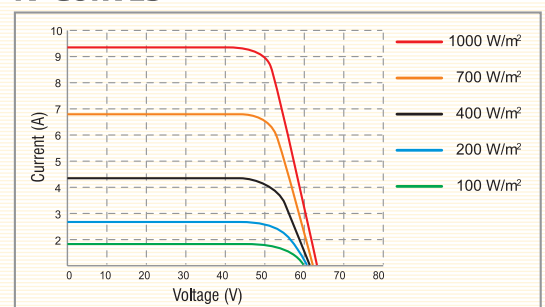
### THERMAL PARAMETERS

Tc of Open Circuit Voltage	-0.36% / °C
Tc of Short Circuit Current	0.06% / °C
Tc of Power	-0.36% / °C
Maximum System Voltage	600 V - 1000 V - 1500 V
NOCT	45 °C ± 2 °C
Operating Range	-40 °C to +85 °C

### MECHANICAL DATA

L x W x H (mm)	1960 x 1300 x 40
Weight	33 kg
Junction Box	IP67
Cable & Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A

### IV CURVES

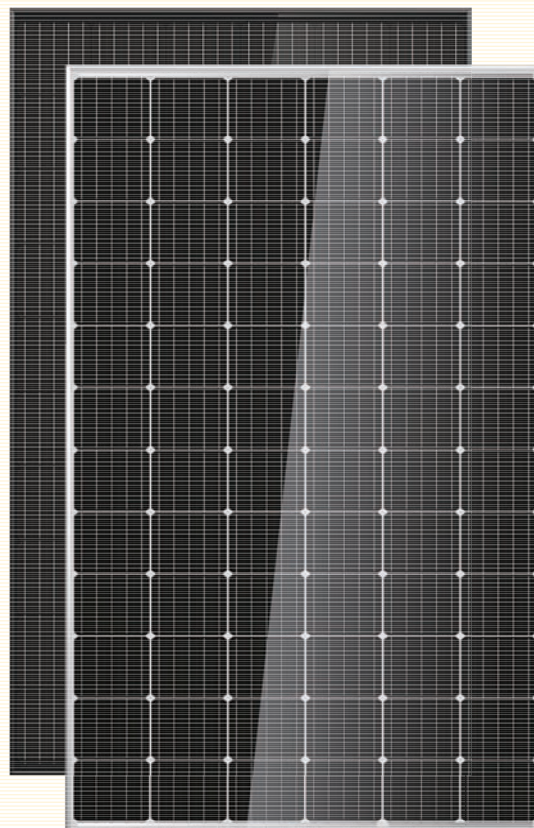
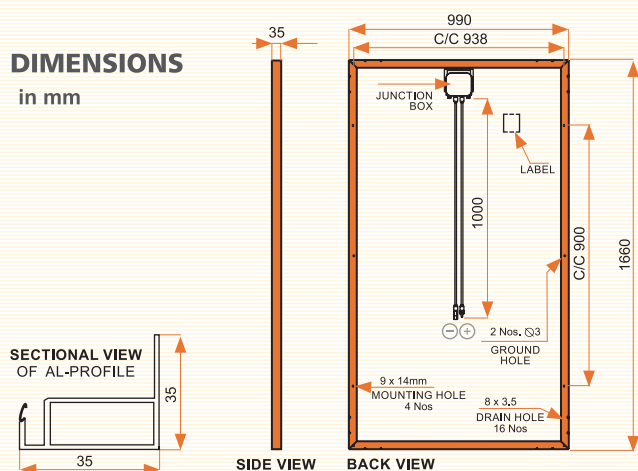


# Earth Mono Series



## Monocrystalline Solar PV Modules 60 Cells

### DIMENSIONS in mm



### TECHNICAL SPECIFICATIONS - (M Series Module)

TYPE	KE 275	KE 280	KE 285	KE 290	KE 295	KE 300	KE 305	KE 310	KE 315	KE 320	KE 325	KE 330	KE 335
Pmp/W*	275	280	285	290	295	300	305	310	315	320	325	330	335
Imp/A	8.76	8.84	8.97	9.01	9.08	9.19	9.28	9.37	9.46	9.55	9.64	9.73	9.82
Vmp/V	31.4	31.7	31.8	32.2	32.5	32.6	32.9	33.1	33.3	33.7	33.8	34.0	34.2
Isc/A	9.26	9.35	9.45	9.5	9.55	9.64	9.85	9.94	9.95	9.96	9.97	9.98	9.99
Voc/V	38.7	39	39.3	39.5	39.7	39.9	40.0	40.2	40.5	40.8	41.1	41.4	41.7

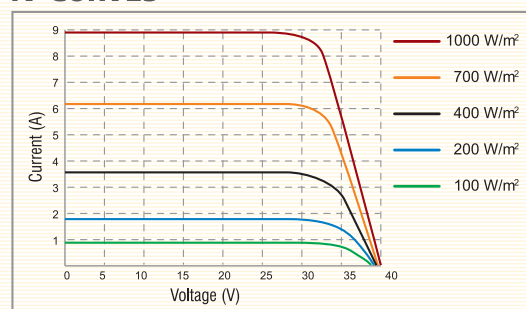
### THERMAL PARAMETERS

Tc of Open Circuit Voltage	- 0.36% / °C
Tc of Short Circuit Current	0.06% / °C
Tc of Power	- 0.36% / °C
Maximum System Voltage	1000 V - 1500 V
NOCT	44 °C ± 2 °C
Operating Range	- 40 °C to +85 °C

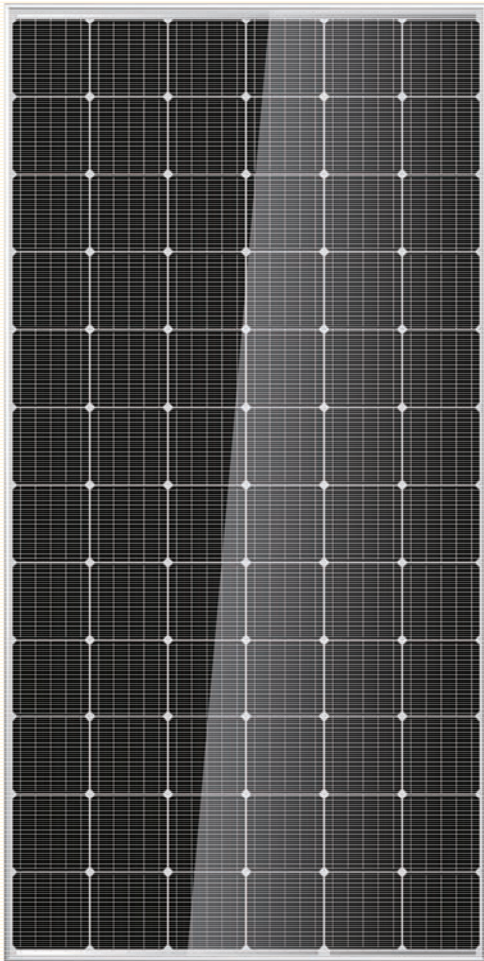
### MECHANICAL DATA

L x W x H (mm)	1660 x 990 x 35
Weight	18.5 kg
Junction Box	IP67
Cable & Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A

### IV CURVES

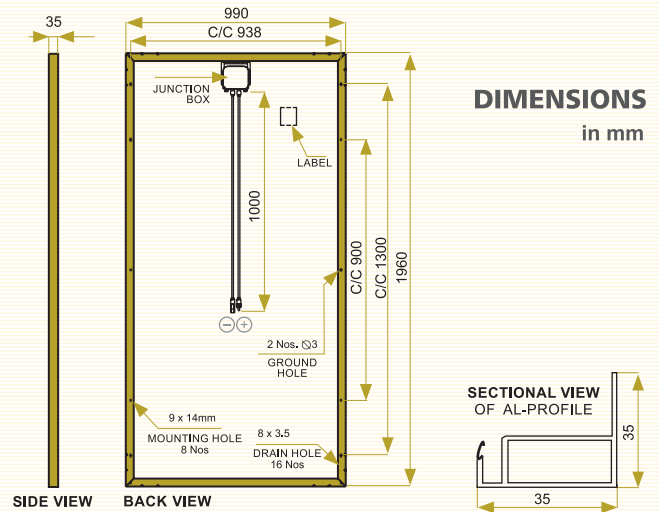


\* STC: 1000 w/m<sup>2</sup>, 25 °C, AM 1.5



# Neptune Mono Series

## Monocrystalline Solar PV Modules 72 Cells



### TECHNICAL SPECIFICATIONS - (M Series Module)

TYPE	KE 340	KE 345	KE 350	KE 355	KE 360	KE 365	KE 370	KE 375	KE 380	KE 385	KE 390	KE 395	KE 400	KE 405	KE 410
Pmp/W*	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410
Imp/A	8.9	9	9.09	9.17	9.24	9.77	9.33	9.37	9.39	9.44	9.47	9.52	9.57	9.60	9.64
Vmp/V	38.2	38.4	38.5	38.7	39.0	39.3	39.7	41.1	40.5	40.8	41.2	41.5	41.8	42.2	42.6
Isc/A	9.45	9.5	9.6	9.69	9.70	9.88	9.83	9.88	9.75	9.92	9.93	9.93	9.94	9.96	9.97
Voc/V	46.5	46.7	46.9	47	47.7	48.0	48.3	48.5	48.9	49.10	49.30	49.5	49.7	49.90	50.10

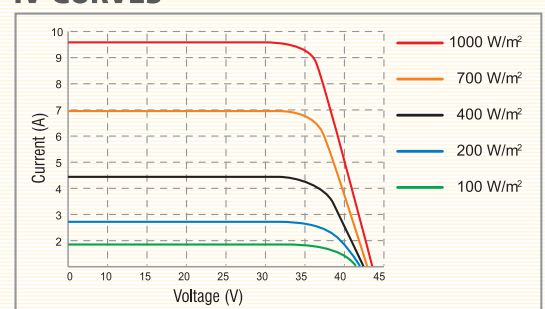
### THERMAL PARAMETERS

Tc of Open Circuit Voltage	- 0.36% / °C
Tc of Short Circuit Current	0.06% / °C
Tc of Power	- 0.36% / °C
Maximum System Voltage	1000 V - 1500 V
NOCT	44 °C ± 2 °C
Operating Range	- 40 °C to +85 °C

### MECHANICAL DATA

L x W x H (mm)	1960 × 990 × 35 and 1979 × 1002 × 35
Weight	20.5 kg
Junction Box	IP67
Cable & Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A

### IV CURVES

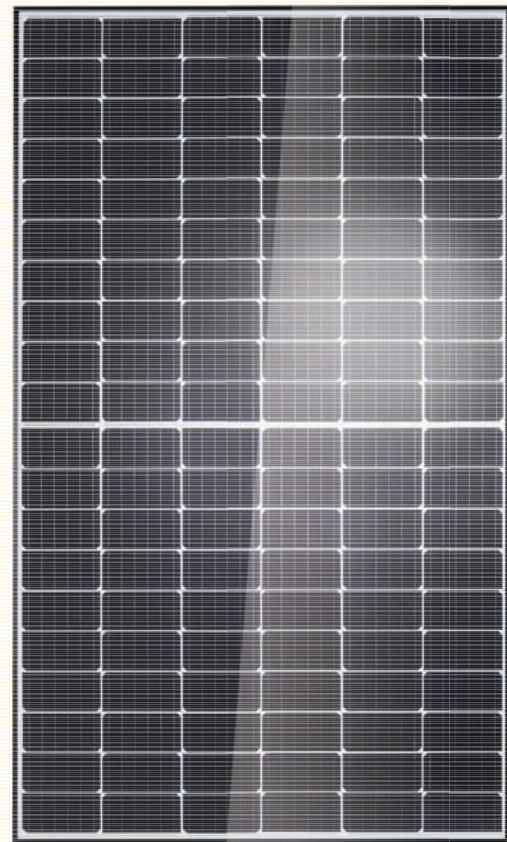
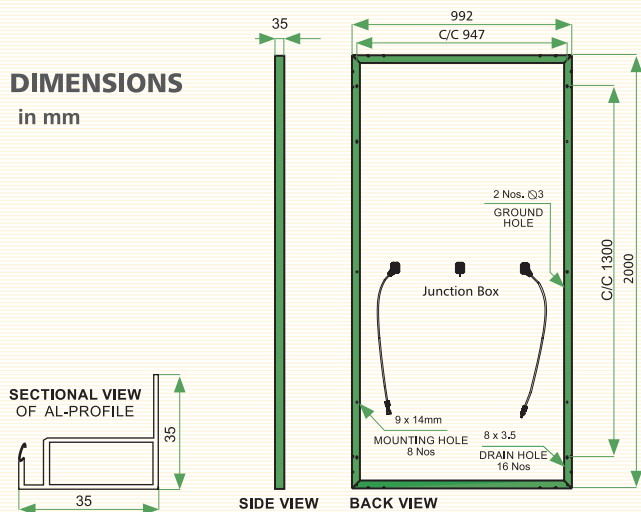


# Saturn Mono Split Cell Series



## Monocrystalline Solar PV Module Framed 144 Half-cut Cell

### DIMENSIONS in mm



### TECHNICAL SPECIFICATIONS - (MX Series Module)

TYPE	KE 350	KE 355	KE 360	KE 365	KE 370	KE 375	KE 380	KE 385	KE 390	KE 395	KE 400	KE 405	KE 410
Pmp/W*	350	355	360	365	370	375	380	385	390	395	400	405	410
Imp/A	9.13	9.21	9.28	9.37	9.44	9.52	9.60	9.61	9.64	9.69	9.72	9.76	9.80
Vmp/V	38.4	38.6	38.8	39.0	39.2	39.4	39.6	40.1	40.5	40.8	41.16	41.51	41.86
Isc/A	9.60	9.68	9.73	9.83	9.88	9.93	9.99	10.03	10.08	10.13	10.18	10.23	10.28
Voc/V	46.5	46.9	47.2	47.4	47.6	47.8	48.0	48.5	49.7	50.1	51.03	51.83	52.63

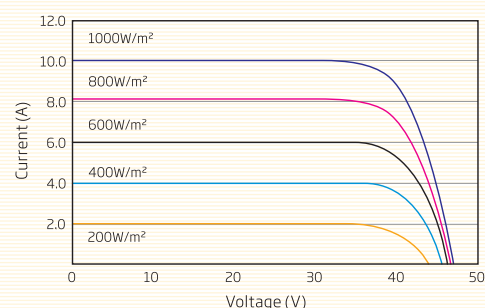
### THERMAL PARAMETERS

Tc of Open Circuit Voltage	- 0.36% / °C
Tc of Short Circuit Current	0.06% / °C
Tc of Power	- 0.36% / °C
Maximum System Voltage	1000 V - 1500 V
NOCT	44 °C ± 2 °C
Operating Range	- 40 °C to +85 °C

### MECHANICAL DATA

L x W x H (mm)	2008 x 1002 x 35
Weight	22.5 kg
Junction Box	IP67
Cable & Connectors	1000 mm length with 4 mm <sup>2</sup> MC4 connector
Superstrate	High transmission low iron AR Coated tempered glass
Frame	Anodized Aluminium frame
Mechanical Load Test	5400 Pa
Maximum Series Fuse Rating	20 A

### IV CURVES OF PV MODULE (380W)



\* STC: 1000 w/m<sup>2</sup>, 25 °C, AM 1.5

# Flexible Solar Module

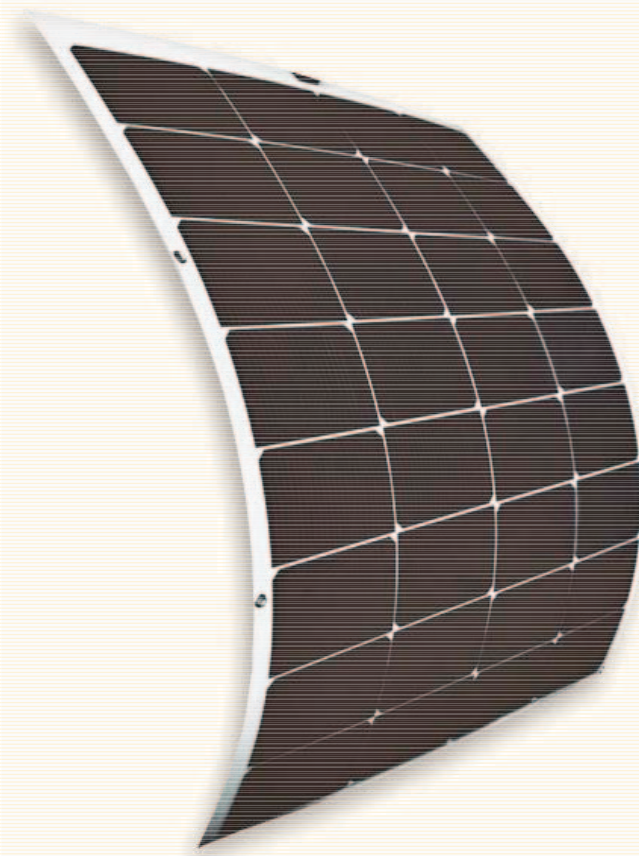
## KEFlexi 50/100/150

KOSOL MultiWire Technology  
 Resistant to Step On  
 Immune to Micro Cracks  
 Low Light Performance  
 Thin and Light weight

KOSOL MultiWire Electrode Technology may minimize electrical loss during transfer. Compared with conventional bus bar design, MultiWire cell is less affected by cell cracks.

The power generation area of a conventional bus bar design will be less effective due to cell cracks or breakage.

Multiwire technology has more interconnection points and the power generation will be more resistant against cell cracks or breakage. Upto 7X more interconnection points vs conventional 3BB cell design (2100 point vs 300 points).



### TECHNICAL SPECIFICATIONS

TYPE	KE 50	KE 100	KE 150
Pmp/W*	50	100	150
Imp/A	2.67A	5.25A	9.36V
Vmp/v	17V	17V	16.2V
Isc/A	3.16A	6.19A	10.23A
Voc/V	23V	23V	18.8V
Dimension (mm)	516 x 675 x 2.5	935 x 675 x 2.5	1500 x 710 x 2.5
Weight (kg)	1	1.8	2.3

### Advantages:

Minimize power generation loss during summer seasons.

During summer seasons, the temperature on the surface of the solar cells can reach as high as 80°C, with Multiwire electrode technology, the wire on the front and back side can act as a heat sink and help draw heat away from the cell surface and may minimize power generation loss due to the high heat.

# Solar Dryer



Kosol Energie is one of the leading designers, manufacturers, Suppliers and exporters of Solar Air Heating systems in INDIA. Our organization also concerns with designing, manufacturing and supplying of all types of Solar Dryers like Tunnel, Portable and Cabinet Dryer. Solar Dryer removes unnecessary moisture from the product with retention of original colour and taste as well as keeps the product free from any environmental factor, dust, dirt, animal or bird droppings.

## Applications of Solar Dryer

- Onion Dryer
- Vegetable Dryer
- Fruit Dryer
- Solid Waste Dryer
- Ayurved Herbs
- Mushroom Dryer
- Fish Dryer

## Advantages of Solar Dryer

- Faster & controlled drying with stable air temperature
- Saving of fuel / electricity, time & labour
- Hygienic product with natural colour, nutrients, aroma & taste
- Protection from flies, pests, rain, dust & UV rays
- Less risk of spoilage in-case of low sunlight & low ambient temperature

### DRYER TECHNICAL SPECIFICATIONS

TYPE	KESD - 24
Dimension (mm)	2100 x 1050 x 1100
Capacity	24 kg per batch
Glass	Tempered Toughened Textured Glass
Food Tray	8 Nos.
Dry Air Path Dist.	4 Meter

## Amla Candy

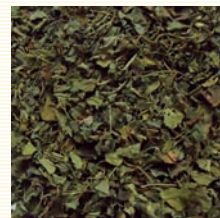


Direct Sunlight



Solar Dryer

## Coriander



Direct Sunlight



Solar Dryer

## Chikoo



Direct Sunlight



Solar Dryer

# Solar Rooftop and EPC Solution Provider

KOSOL Energie is dedicated to simplify innovation with technology and engineering capabilities to offer clients a one-stop solution for their Solar Power requirements.

With a strategic positioning in the sector, KOSOL Energies delivers 360° solutions.

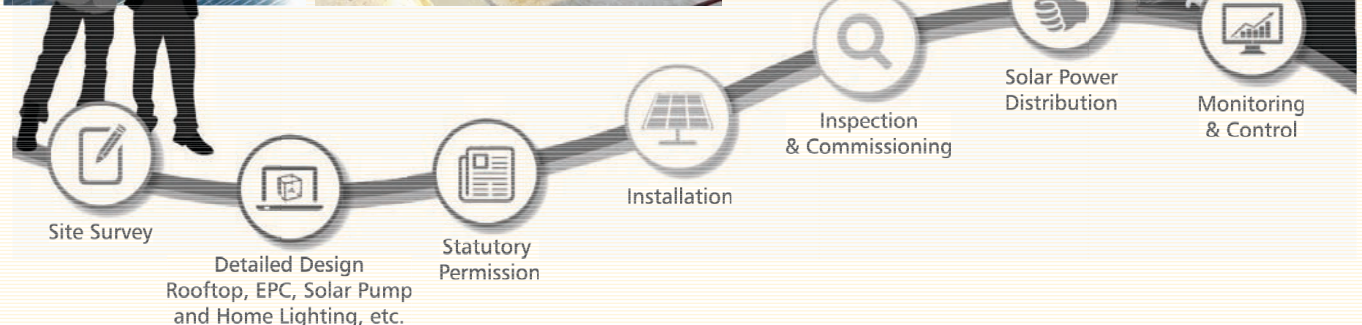
KOSOL's Engineering, Procurement and Construction (EPC) team provides bankable, innovative and reliable solar energy solutions to customers across the world.

We are EPC solutions provider, catering to Indian and international markets for all solar EPC solutions.

As an EPC company, KOSOL provides in-house design and construction services for building the solar power plants. Our range of services includes technical planning of system, selection of the best components and professional installation; all under one roof.

Our own solar module production and close ties with our suppliers allow precise selection of every system component. Consequently, solar power plants become more efficient and reliable offering secured long-term profits.

Our operation and maintenance team closely monitors the PV system with periodic inspection of the plant. The continuous remote monitoring of the electricity output and plant performance will be guaranteed the highest performance, and the solar plants will have a stable and growing generation throughout their lifetime.



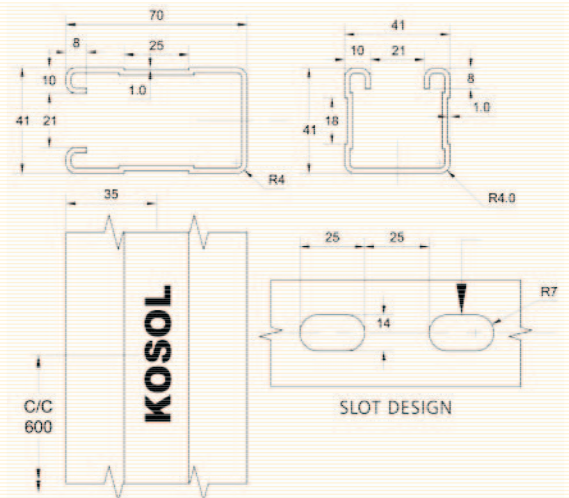
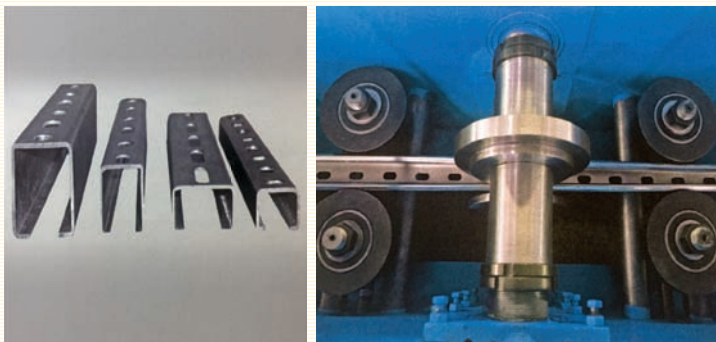
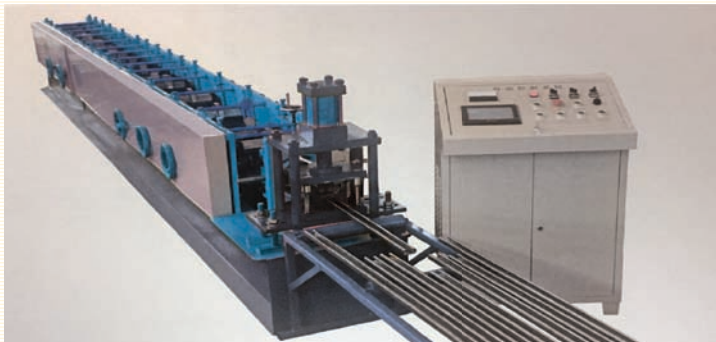
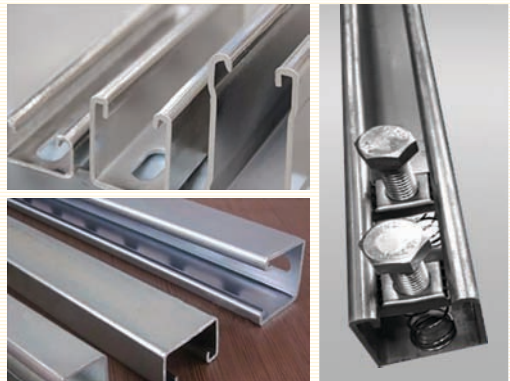


# Solar Mounting Racking System

KOSOL Energie is the leading manufacturers of roof mounted and ground mounted solar racking systems. To suit different roofs and terrain grounds with both traditional foundation and ballasted system available.

## Applications

- Flat Rooftops Racking System
  - Inclined Rooftops Racking System
  - Ground Mount Racking System
  - Solar Water Pump Mount Racking System
- Strong and different Terrain-adaptability,



## Salient Features

- No grading required
- Channel structural design for quick and easy installation which reduces cost
- Hot-dip Galvanizing / Polyester Powder Coated steel surface treatment to ensures longer life
- Spring-bolt fastener provided for the ease and saving time during assembly
- Flexibility and fast installation, because of Slot design
- Low construction and skilled labour costs
- Low transportation costs



# Solar AC & DC Water Pumping System

KOSOL Energie offers both options **AC and DC Solar Water Pumping System** which operating directly on solar energy.

## Benefits

- No dependency on any other fuel or conventional sources
- Reliable water supply from dawn to dusk
- Versatile applications with high life expectancy
- Under and over voltage protection
- Reverse polarity and dry run protection
- Easy & low maintenance



## Applications

- Agriculture
- Fountains
- Sprinkle Irrigation
- Drip Irrigation
- Mass Irrigation
- Livestock Watering
- Water Treatment Plants
- Filling Overhead Tanks
- Forced Water Circulation
- Swimming Pools & Resorts
- Drinking Water Supply
- Townships
- High-rise Buildings
- Row Houses

## Specifications

- Solar Modules : KOSOL Energie Polycrystalline Modules with high efficiency and long life
- Controller : Sine-wave Pump Controller with MPPT (SPCM) having two stage converter topology offered better performance throughout the operational range & over the most popular controllers using the Variable Frequency Drives (VFD).
- Structure : MS Galvanized structures (Dual-Axis/Fixed Tilt) to ensure higher yield and longer durability
- Pump-set : Single & Three phase motor pump-sets designed to provide optimal discharge on Solar mode. KOSOL also offers DC Water Pumping Systems from 3, 5, 7.5 & 10 HP capacities.

## TECHNICAL SPECIFICATIONS

Model	3 Ph AC Motor Pump Rated Power	Inverter Unit Rated Power	Structure Type of Tilt	Solar Modules		System Performance	
				Pmax at STC (kW)	Area Required (Sq m)	Head (m)	Discharge* (Ltr/day)
KE – 3HP SP	3 Hp	3 Hp	Dual Axis Manual	3	30	50	57000
KE – 5HP SP	5 Hp	5 Hp	Dual Axis Manual	5	50	50	91000
KE – 7.5HP SP	7.5 Hp	7.5 Hp	Fixed	7.5	75	100	140400
KE – 10HP SP	10 Hp	10 Hp	Fixed	10	100	100	180900
KE – 15HP SP	15 Hp	15 Hp	Fixed	15	150	100	243000

# KOSOL Innovative Hybrid Collector

**KOSOL Hybrid Collector EPVT-2.0 is a combination of a Twin solar photovoltaic module with polycrystalline silicon cell and solar thermal collector.** Photovoltaic module changes solar energy into electric energy, while Solar collector is responsible for a conversion of a solar radiation to thermal energy, used for heating domestic water and central heating. KOSOL Hybrid Collector EPVT-2.0 are available ranging from 315 to 345 Wp in polycrystalline and upto 380 Wp in monocrystalline.

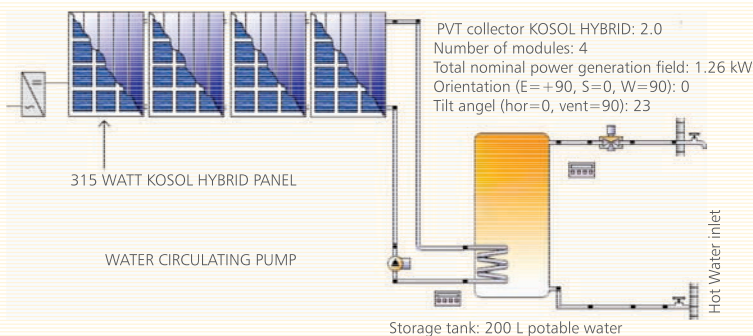


## Advantages of a KOSOL hybrid collector EPVT-2.0

- Higher efficiency of electric energy production in comparison to standard photovoltaic modules.
- Thermal part of a collector is used for heating domestic hot water and central heating support.
- More economic capabilities, only one module is required for heat and electric energy production. Saves installation space.

Main element of a thermal part of the collector EPVT-2.0 is an absorber with a tube construction, made entirely of aluminium flat, and at the same time straight surface, allows to achieve a better connection of the absorber with a photovoltaic cell. By using thermal system in a hybrid collector PVT occurs a reception of warmth with the use of cooling fluid flowing by Roll-Bond exchanger, the collector EPVT-315W is upto 25% higher than with the standard absorber. By removing the heat, thermal system increases the capacity to process solar radiation into electric current, but also provides a lot of thermal energy that increase efficiency of photovoltaic modules.

### System Installation Drawing of KOSOL Hybrid Collector



## TECHNICAL SPECIFICATIONS

Collector E-PVT2,0 W	Symbol	Unit	Value
Width	A	mm	1006
Height	B	mm	2007
Depth	C	mm	85
Surface	S	m <sup>2</sup>	2.02
Casing	Aluminium profile		

## ELECTRICAL PARAMETERS

Peak Power (with 1000 W/m <sup>2</sup> )	Pmax	W	315
Type of cells	Polycrystalline		
Amount of cells		pcs	72
Size of cells		mm	156x156
Rated current	I <sub>mp</sub>	A	8.51
Short-circuit current	I <sub>sc</sub>	A	9
Nominal voltage	V <sub>mp</sub>	V	37
Opencircuit voltage	V <sub>oc</sub>	V	45.6
Total Peak Power (for 1000W/m <sup>2</sup> )	Q <sub>max</sub>	W	1352

## THERMAL PARAMETERS

Peak power (with 1000 W/m <sup>2</sup> )	Q	W	1037
Type of absorber	Aluminium exchanger Roll-Bond		
Aperture surface	S <sub>n</sub>	m <sup>2</sup>	1.86
Width	a	mm	954
Height	b	mm	1953
Collector efficiency	η	%	55.5
Coefficient	b <sub>0</sub>	W / (m <sup>2</sup> K <sup>2</sup> )	0.051
Coefficient	b <sub>1a</sub>	W / (m <sup>2</sup> K <sup>2</sup> )	9.547
Coefficient	b <sub>2a</sub>	W / (m <sup>2</sup> K <sup>2</sup> )	1.389
Maximum operating pressure	P <sub>max</sub>	bar	6
Maximum operating temp.	t <sub>max</sub>	°C	80
Fluid content	V	dm <sup>3</sup>	1.2

# Integrated Smart Sensor Solar LED Street Lights



Today Solar Lighting System is widely accepted for illumination of streets, cross roads, parks, forest areas and buildings. Solar Systems are highly preferred in urban, rural and isolated area due to its independent built-in solar panel with long life lithium batteries and Intelligent Motion Sensor. We offer, Integrated Smart Sensor Solar LED Lights, which are base on microprocessor managed auto dusk to dawn.

## Salient Features

- Independent power source & Motion Sensor Controlled
- Controlled charging & discharging to prolong battery life
- Automatic dusk to dawn operation
- Highly reliable and best quality PV module
- Designed to operate in rough weather conditions

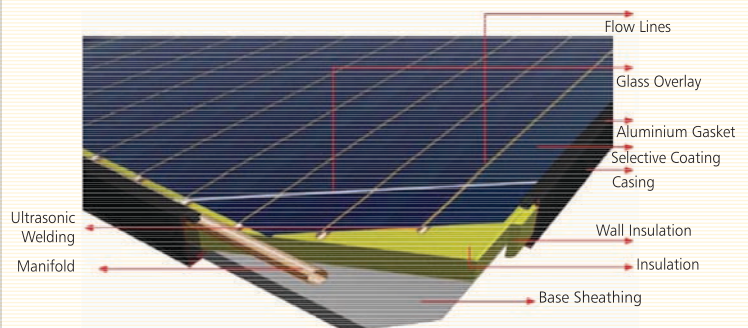


## TECHNICAL SPECIFICATIONS

Model	SSLD-10	SSLD-20	SSLD-30
LED	1000Lumens	2000Lumens	3000Lumens
Rechargeable Li-ion Battery	72 Wh	144 Wh	258 Wh
Solar Panel (high efficiency)	18 V / 12 W	18 V / 25 W	18 V / 35 W
Install height	2.5~3meters	3~4 meters	4~5 meters
Solar charging time	11 hours by bright sunlight	9~10 hours by bright sunlight	9~10 hours by bright sunlight
Lighting time	3 nights	3 nights	3 nights
Lighting mode	*25% dim light + motion sensor	*25% dim light + motion sensor	*25% dim light + motion sensor
Waterproof	IP 65	IP 65	IP 65
Material	Aluminum alloy case	Aluminum alloy case	Aluminum alloy case
Size (mm)	505x227x164	808x227x164	1098x227x164
Work temperature	-25 °C to 65 °C	-25 °C to 65 °C	-25 °C to 65 °C
Application	Street, Courtyard, Roadway, Pathway, Public square, Campus, Parking lot		

# SunRay FPC Pressurized & Non Pressurized System

In Flat Plate Collector Solar System Device, the principle is to expose surface of a flat plate to solar radiation, so that the radiation is absorbed and transferred to a heat medium inside the tubes. The SunRay FPC System follows careful selection of materials and their specifications/construction for the solar collector and the riser tubes which ensures greater efficiency and quicker heating. FPC systems are most suitable where water quality is non-scale forming and there is a need for high pressure.

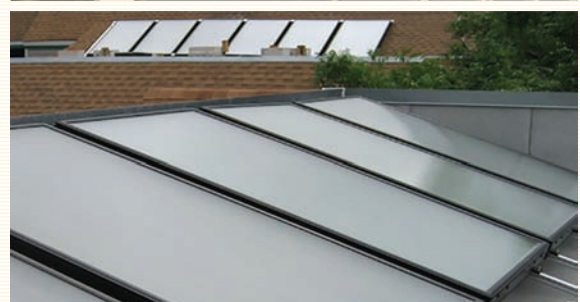


## FRAME ASSEMBLY

Collector size	2030 x 1030 x 100 ±10 mm
Absorber Area	2 m <sup>2</sup>
Collector box	Extruded Aluminium, Thickness-1.6mm with PP Coating top screw fitting
Finish	PP Coating
Glass retaining Angle Frame	Extruded Aluminium Thickness-1.2mm with PP Coating top screw fitting
Back sheet	Aluminium 0.7 mm thick, Riveted & Sealed
Glass	4 mm, toughened texture with 92% Transmissivity
Glass Beading / sealing	EPDM
Grommets	EPDM with inside / outside locking collar
End connection	Brass flange type
Insulation	50mm back-wall & 25mm on side-wall
Reflective foil	Aluminium 50 microns
Frame Corners	Sealed from inside with silicone Sealant
Weight of Collector	40 kg

## ABSORBER ASSEMBLY

Selective Coating	Selective, black chrome – Absorptivity ≥ 95%, emissivity ≤ 5%
Bonding between Raiser Sheet & Tube	Ultrasonic welding / Laser welding
Bonding between Headers & Raiser	Metallurgical bonding
Fin	99.9% Copper thickness 0.1 mm
Number of Fins	09 (nine)
Test pressure	10 kg/cm <sup>2</sup>
Header pipe	Above 99%; Copper – 1" thickness x 0.7 mm
Riser pipe	Above 99%; Copper – 1/2" thickness x 0.56 mm
Collector box	Extruded Aluminium, Thickness 1.6 mm with PP Coating
Max. operating pressure	6 kg/cm <sup>2</sup>
Max. operating temp.	95 °C



# SunRay Solar Water Heater



SunRay has established water heating system using technologies ETC and FPC solar collecting system, manufacturing and in-house R&D facilities. SunRay solar water heating system ranges from 100 to 500 liters per day stand alone models to centralized systems of several thousand liters capacity by using multiple systems. Applications are such as multi-storey apartments to large townships, swimming pools, commercial and industrial etc. SunRay offers pressurized systems suitable for boiler feed water, process water heating and other industrial water heating applications.

## The SunRay Advantages

- Convenience of hot water supply at zero cost
- High performance in all weathers
- Faster Water Heating - even during cloudy weather due to triple coated glass tube technology
- Advanced maximum 50 mm Puf insulated storage tanks with marginal temperature drop at night and cloudy conditions for all weather heating
- Contemporary design
- 100% Safe and more Cost Effective as compared to Gas and Electric Geyser
- Introduce Hi-technology to with stand failure of Robust long lasting inner tank by usages of heavy duty dish-end and its fixing
- Stainless Steel fasteners enhance structure stability, longer life
- Easy maintenance and support of Annual Maintenance Contract



**Performance**  
that is Class apart





**SunRay<sup>®</sup> Pro**

**Great Value,  
high Affordability**



Usage of best in class raw materials & the-state-of-the-art manufacturing coupled with proprietary & patented coating ensures highest quality & durability of the storage tank

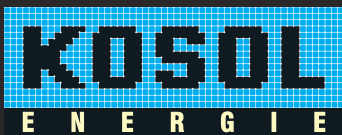
### TECHNICAL SPECIFICATIONS

Features	SunRay Klassic	SunRay Pro
System Capacity		
ETC Tube Collector	58x1800 mm (upto 250); 70x2100 mm for 300 & above	58x1800 mm (upto 250); 70x2100 mm for 350 & above
Outer Cladding	0.5 mm GI with PP Powder Coating	
Puf Insulation	50 mm	50 mm
Stand	1.6 mm GI with PP Powder Coating	30x30x3 mm M.S. with PP Powder Coating
Connections	Inlet 1"; Outlets 1", Air-vent 1"; Electric provision 1.25"	
Pressurized system	Available	
Electric Back up	Optional	
Anode Protection	Optional	
Automation	Optional	
Warranty	7 years	5 years

Notes : Assuming 200 lpd water heaters save an average 8 units per day at an average cost of Rs. 5 per unit for 365 days.  
Water hardness should be less than 200 ppm for effective performance of the system.  
Puf insulation thickness can also be provided as per customers' requirement



Images shown are only for the purpose of illustration and may not be a part of standard offering. Due to continuous product improvement activities, the specifications are subjected to revision without notice.



## KOSOL ENERGIE

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