

# Benchmark II SPP310-335M60

## 310-330W MWT All Black Module

### Mono 60 Cells

**20.3%**

Module efficiency up to 20.3%

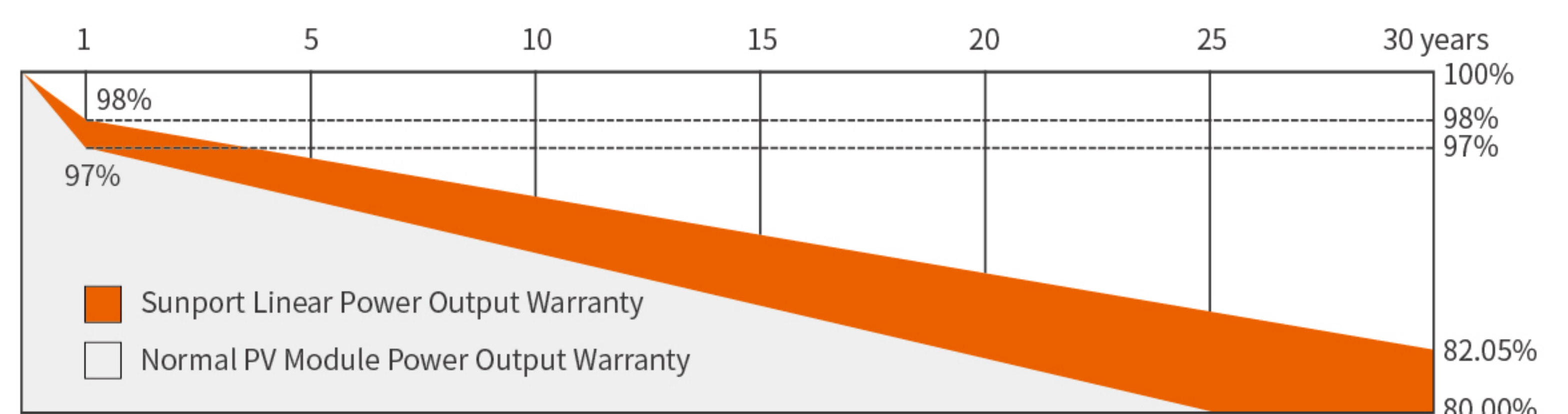
### Benchmark MWT PV Module

- Higher Efficiency**  
The highest efficiency of the series is up to 20.3%.
- Lower Degradation**  
At least 98% of the initial effective output in the 1st year and 82% in the 30th year.
- Higher Yield**  
Higher power generation on the same installation.
- Corrosion-Resistant**  
Certified for Ammonia Resistance and Salt Mist Corrosion.
- Anti-PID**  
Certified for Anti-PID under 85°C/85%RH, for 288hrs.
- Heat-Resistant**  
Improved temperature coefficient as low as -0.36%/°C.

### Reinsurance Coverage for 30 Years



Insured by PICC and LLOYD'S



※1st year degradation less than 2%, 30 years linear power output 82% guaranteed.

### Comprehensive Qualifications & Certifications

- ★IEC 61215, IEC 61730, IEC 61701, IEC 62716, IEC 60068-2-68.
- ★CQC&CGC Top Runner Advanced Technology Certification (4A class)
- ★ISO 9001:2015 Quality Management System
- ★ISO 14001:2015 Environment Management System
- ★OHSAS 18001:2007 Occupation Health Safety Management System
- ★ TUV NORD and UK NQA Quality System Certification



## Electrical Characteristics at Standard Test Conditions(STC)

Spec/Model	Unit	SPP310M60	SPP315M60	SPP320M60	SPP325M60	SPP330M60
Max-Power(Pm)	W	310	315	320	325	330
Power Tolerance	%			0~+3%		
Max-Power Voltage(Vm)	V	32.0	32.2	32.4	32.6	32.8
Max-Power Current(Im)	A	9.69	9.79	9.88	9.97	10.07
Open-Circuit Voltage(Voc)	V	39.2	39.4	39.6	39.8	40.0
Short-Circuit Current(Isc)	A	10.20	10.28	10.36	10.44	10.52
Module Efficiency(ηm)	%	19.1	19.4	19.7	20.0	20.3
STC:AM=1.5, Irradiation1000W/m <sup>2</sup> , Module Temperature25°C						

## Electrical Characteristics at Nominal Module Operating Temperature (NMOT)

Spec/Model	Unit	SPP310M60	SPP315M60	SPP320M60	SPP325M60	SPP330M60
Max-Power(Pm)	W	232	236	240	244	248
Max-Power Voltage(Vm)	V	29.3	29.5	29.7	29.9	30.1
Max-Power Current(Im)	A	7.93	8.01	8.09	8.17	8.25
Open-Circuit Voltage(Voc)	V	35.9	36.0	36.1	36.2	36.3
Short-Circuit Current(Isc)	A	8.35	8.43	8.51	8.59	8.67
NMOT: Irradiation800W/m <sup>2</sup> , ambient temperature20°C,Wind Speed1m/s						

## Temperature Coefficient

Nominal Module Operating Temperature	43±2°C
Temperature coefficient of Pmax	-0.36%/°C
Temperature coefficient of Voc	-0.28%/°C
Temperature coefficient of Isc	0.06%/°C

## Package

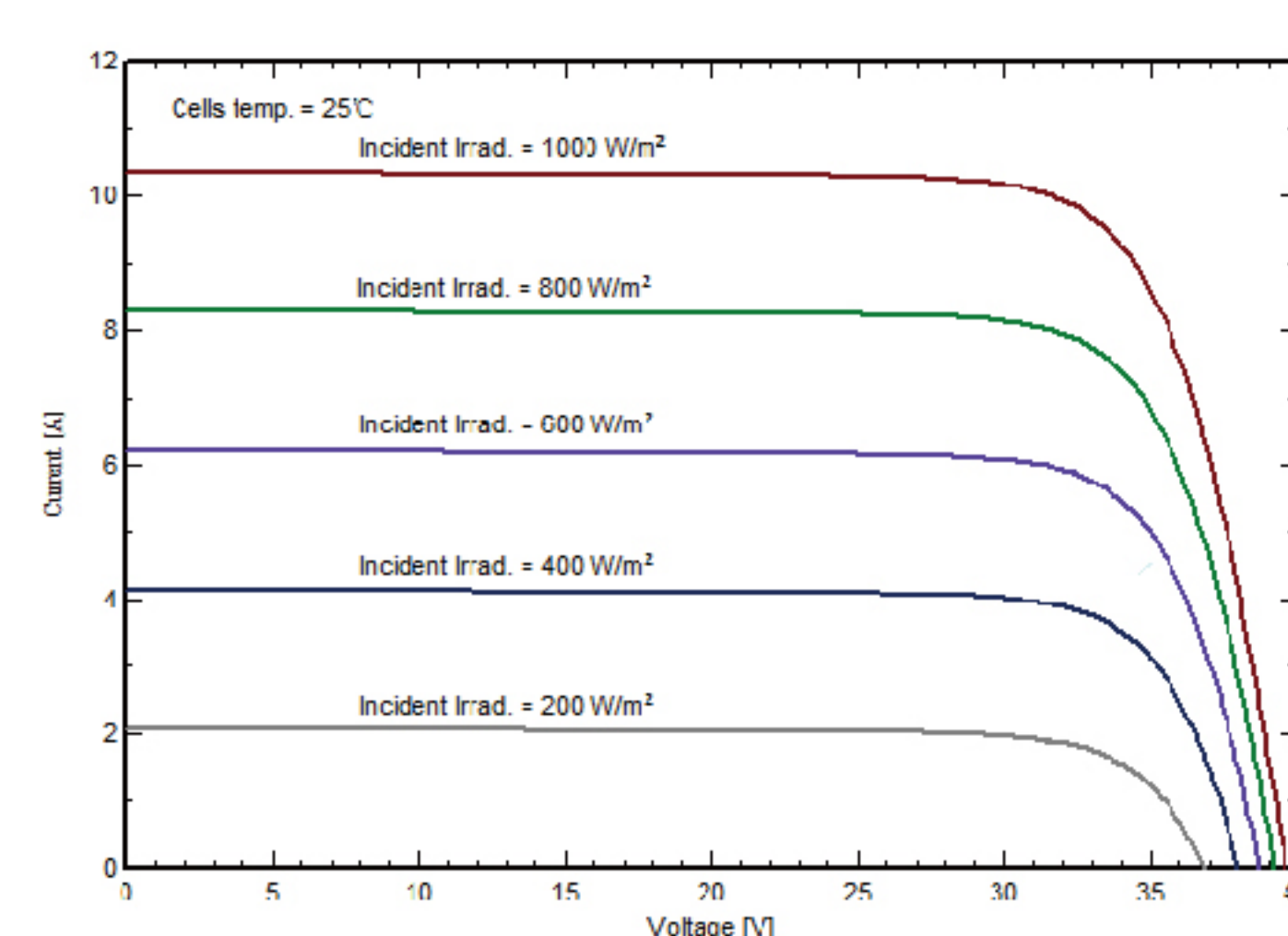
Transportation	Container Size	Quantity(pcs)	Quantity(per pallet)
Container	20' GP	372	31
Container	40' HC	868/938	31

## Mechanical Property

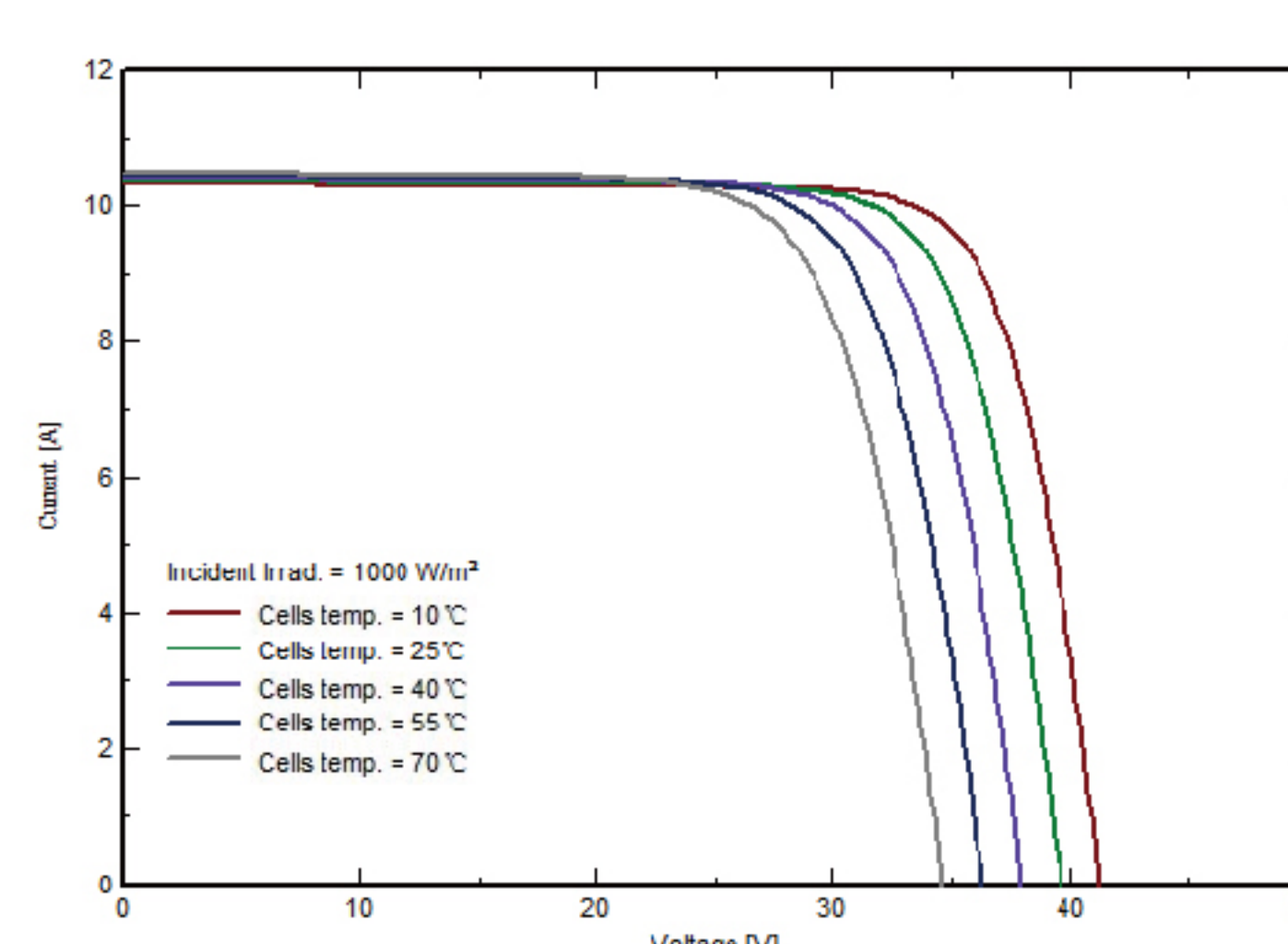
Dimension(L×W×H)	1640mmx992mmx35mm
Weight	18.5kg
Glass Type	High Transmittance Anti-reflective Coated Tempered Glass /3.2mm
Solar Cell	60(10x6)/Mono/158.75mm
Encapsulant	EVA
Frame	Anodized Aluminum Alloy / Black
Junction Box	IP67&IP68
Cable	1000mm / 4mm <sup>2</sup>
Connector	MC4 Compatible

## I-V Curve

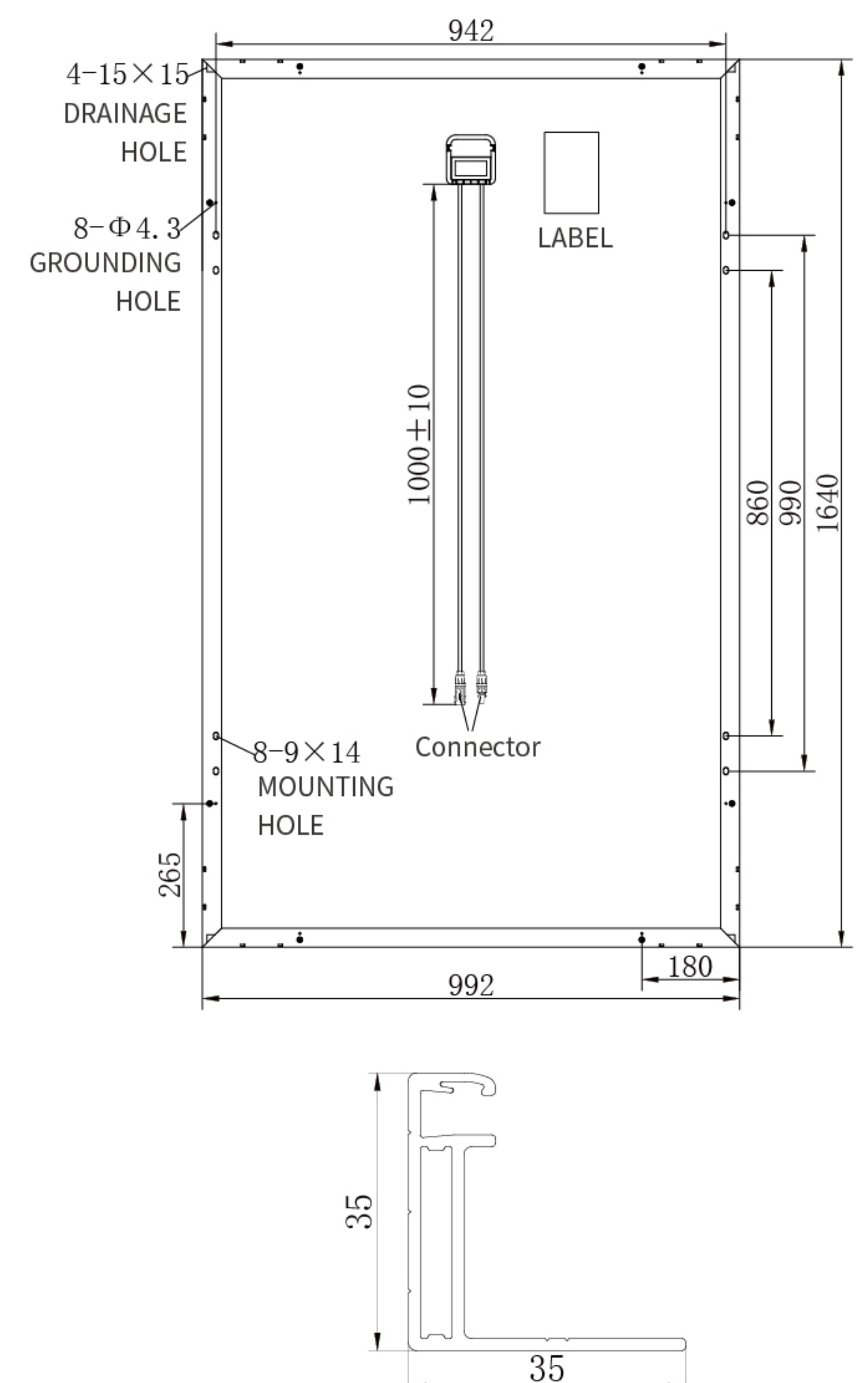
I-V Curve at different irradiation (SPP320M60)



I-V Curve at different temperature (SPP320M60)



## Module Size



## Operating Conditions

Max System Voltage	1000V(TUV)
Max Fuse Rated Current	15A
Operating Temperature Range	-40°C~+85°C
Mechanical Load	5400Pa (front) /2400Pa (rear)
Max Allowable Hail Load	φ25mm hail, from 1m of distance at 23 m/s
Application Class	Class A