

# GKA144M-166

## 420-460 Watt

MONO CRYSTALLINE MODULE

9BB  
166mm

# GAMKO SOLAR

## KEY FEATURES



### 9 Busbar Solar Cell:

9 busbar cell design improves module efficiency and offers better aesthetic appearance for rooftop in stallation.



### High Efficiency:

Higher module conversion efficiency (up to 24.67%) benefit from Passivated Emmitter Rear Contact (PERC) technology.



### PID Resistance:

Excellent Anti-PID perform ance guarantee limited power degradation for mass production.



### Low-light Performance:

Advanced glass and cell surface textured design ensure excellent performance in low-light tenvironment.



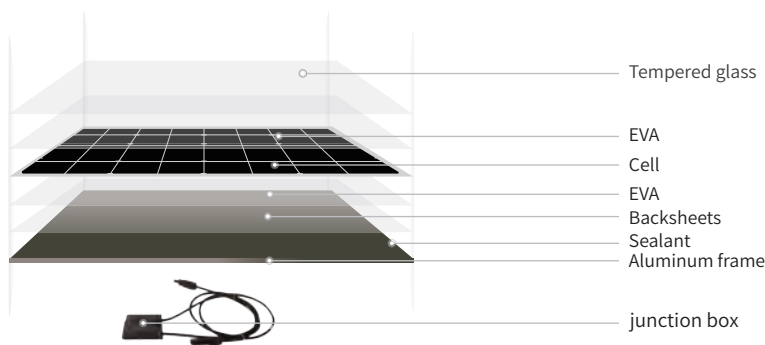
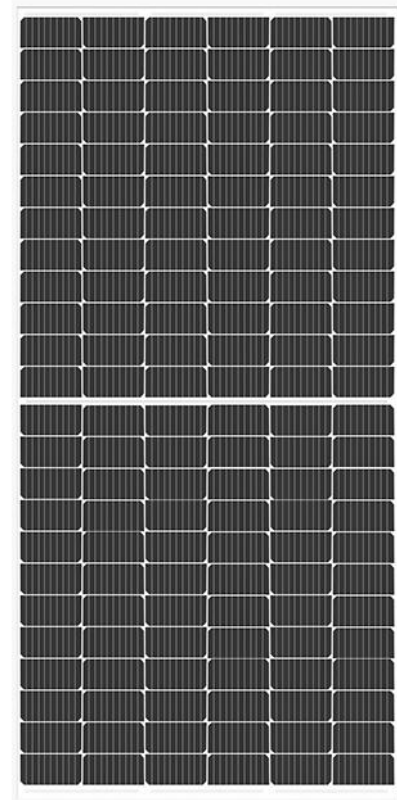
### Severe Weather Resilience:

Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal).



### DURABILITY AGAINST EXTREME ENVIRONMENTAL CONDITIONS:

High salt mist and ammonia resistance certified by TUV NORD.



## GAMKO SOLAR MODULE BOM

**CELLS:** TIER 1 BRANDS SOLAR CELLS

**TEMPERED GLASS:** ULTRA-CLEAR

**EVA:** TRANSPARENCY > 93%

**BACKSHEETS:** REFLECTIVITY > 80%, TPT

**JUNCTION BOX:** IP65/IP67 MAX 30A

**SILICON GEL:** UV, AGING-RESISTANT

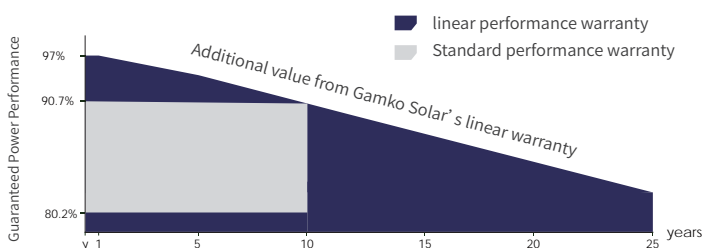
**FRAME:** ANODIZED ALUMINUM 6005-T5

## GAMKO QUALITY CONTROL

- ◆ 2 EL testing avoid cells cracking of each solar module.
- ◆ 2 Power flash testing avoid false welding and insufficient power of each module.
- ◆ Packing tightly with angle protection avoid transportation broken.
- ◆ Gamko Official Warranty cover all Gamko solar module 30 years.

## LINEAR PERFORMANCE WARRANTY

12 Year Product Warranty • 30 Year Linear Power Warranty



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### ELECTRICAL CHARACTERISTICS AT STC

Nominal Power ( $P_{max}$ )	420W	430W	440W	450W	460W
Open Circuit Voltage ( $V_{oc}$ )	50.6V	50.8V	51.0V	51.2V	51.4V
Short Circuit Current ( $I_{sc}$ )	10.58A	10.70A	10.82A	10.94A	11.06A
Voltage at Nominal Power ( $V_{mp}$ )	42.0V	42.2V	42.4V	42.6V	42.8V
Current at Nominal Power ( $I_{mp}$ )	10.00A	10.19A	10.37A	10.56A	10.75A
Module Efficiency (%)	19.29%	19.75%	20.21%	20.66%	21.12%
Operating Temperature	-40°C to +85°C				
Maximum System Voltage	1000VDC /1500VDC				
Fire Resistance Rating	Type 1(in accordance with 1703)/Class C(IEC61730)				
Maximum Series Fuse Rating	20A				

\*STC: Irradiance 1000W/m<sup>2</sup>, Cell temperature 25°C, AM1.5

### ELECTRICAL CHARACTERISTICS AT NOCT

Nominal Power ( $P_{max}$ )	311W	318W	326W	329W	333W
Open Circuit Voltage ( $V_{oc}$ )	46.6V	47.1V	47.7V	47.7V	47.8V
Short Circuit Current ( $I_{sc}$ )	8.57A	8.67A	8.77A	8.86A	8.95A
Voltage at Nominal Power ( $V_{mp}$ )	37.8V	38.3V	38.7V	38.8V	38.8V
Current at Nominal Power ( $I_{mp}$ )	8.20A	8.30A	8.39A	8.48A	8.56A

\*NOCT: Irradiance 800W/m<sup>2</sup>, Ambient temperature 20°C, Wind Speed 1 m/s

### MECHANICAL CHARACTERISTICS

Cell type	Mono 166x166mm
Number of cells	144(6x24)
Module dimensions	2108x1048x35mm
Weight	25kg
Front cover	3.2mm, Anti-Reflection Coating, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction box	IP67 Rated
Cable	TÜV 1x4.0mm <sup>2</sup> , Length:300mm or Customized Length
Connector	PV Connector (compatible)

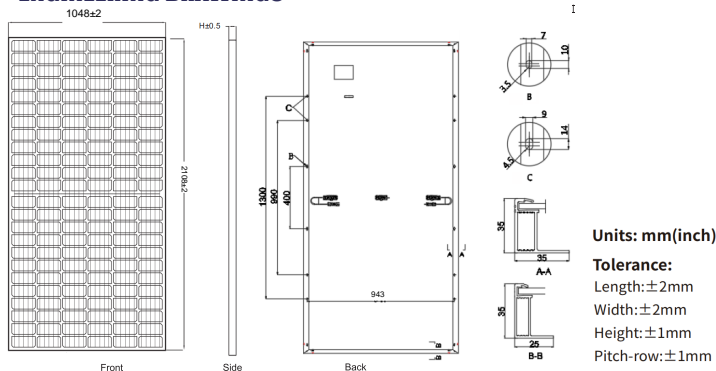
### TEMPERATURE CHARACTERISTICS

Nominal Operating Cell Temperature (NOCT)	45°C ± 2°C
Temperature Coefficients of $P_{max}$	-0.39%/°C
Temperature Coefficients of $V_{oc}$	-0.30%/°C
Temperature Coefficients of $I_{sc}$	0.06%/°C

### PACKAGING

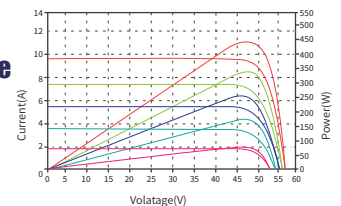
Standard packaging	31pcs/pallet
Module quantity per 20' container	285pcs
Module quantity per 40' container	570pcs(GP)/682pcs(HQ)

### ENGINEERING DRAWINGS

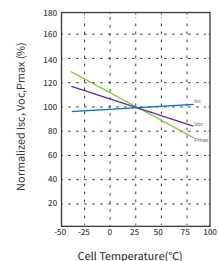


### Electrical Performance & Temperature Dependence

Current-Voltage and Power-Voltage Curves (430W)



Temperature Dependence of  $I_{sc}$ ,  $V_{oc}$ ,  $P_{max}$



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