

Gokin

GEM G12R/96D

425-450W



Supreme Quality



High Efficiency

Module efficiency up to 22.5% based on N-Type wafer and TOPCon technology



Anti-degradation

Unsusceptible to LID, LeTID and less annual degradation due to special characteristics of N-Type



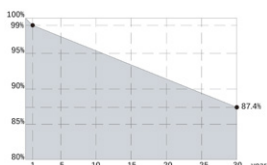
Excellent Energy Yield

More power output in field operation due to better thermal behaviors, weak-light performance and bifaciality



Quality Guarantee

High module quality ensures long-term reliability



At least 87.4% of nominal power up to 30 years

Module Characteristics

12^{Year}

12 Years Product Warranty

30^{Year}

30 Years Linear Power Warranty

1%

1% First Year Degradation

0.4%

0.4% Annual Power Degradation

Comprehensive Certification

IEC 61215(2021) / IEC 61730(2023)

ISO 9001: 2015: ISO Quality Management System

Anti-PID / Ammonia / Salt-mist / Dust and sand



450W

Maximum Power

22.5%

Highest Conversion Efficiency

1%

First Year Degradation

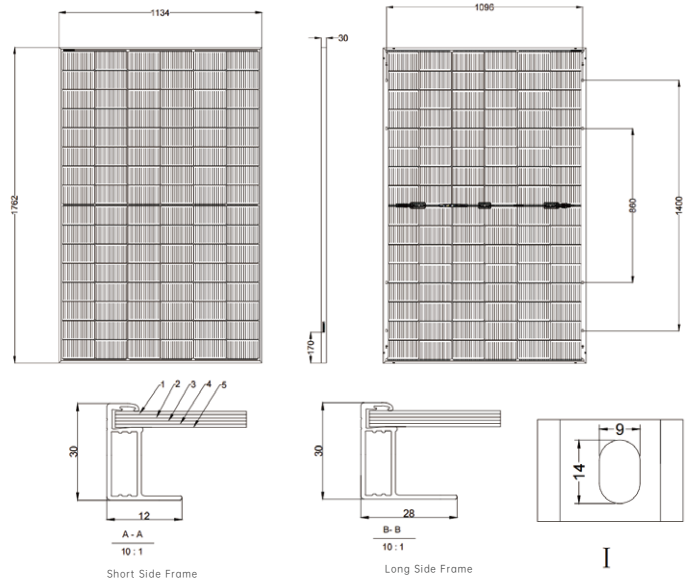
0.4%

2-30 Years Annual Power Attenuation

Mechanical Parameters

Cell Type	N-Type TOPCon
No. of cells	96 (2×48)
Output Cables	TüV 1×4mm ²
	(+)300mm,(-)200mm in length or customized length
Glass	Front: 1.6mm, AR-coating, semi-tempered
	Rear: 1.6mm, semi-tempered
Frame	Anodized aluminum alloy frame
Weight	20.1 kg (44.31 lbs)
Dimension	1762×1134×30mm
Packaging	36 pcs per pallet
	Package size(mm): 1785×1120×1259
	216 pcs per 20' HC, 936 pcs per 40' HC
Protection Class	Class II

Engineering Drawings



* Length:±2mm Width:±2mm Height:±1mm Row Pitch:±2mm

Electrical Characteristics (STC Test)

Module Type	GK-4-48HTBD-425M		GK-4-48HTBD-430M		GK-4-48HTBD-435M		GK-4-48HTBD-440M		GK-4-48HTBD-445M		GK-4-48HTBD-450M	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	425	319	430	323	435	327	440	331	445	335	450	338
Open-circuit Voltage (Voc/V)	34.38	32.44	34.55	32.60	34.72	32.75	34.89	32.91	35.06	33.08	35.23	33.25
Short-circuit Current (Isc/A)	15.73	12.78	15.80	12.82	15.87	12.86	15.94	12.90	16.01	12.94	16.08	12.98
Maximum Power Voltage (Vmp/V)	29.00	27.05	29.18	27.27	29.36	27.49	29.54	27.66	29.72	27.83	29.90	27.96
Maximum Power Current (Imp/A)	14.66	11.80	14.74	11.85	14.82	11.90	14.90	11.97	14.98	12.04	15.05	12.09
Module Efficiency (%)	21.3		21.5		21.8		22.0		22.3		22.5	

Note: 1. STC: Irradiance 1000W/M², Cell Temperature 25°C, AM=1.5 2. NOCT: Irradiance 800W/M², Ambient Temperature 20°C, AM=1.5, Wind Speed 1M/S

Different Rearside Power Gain (Reference to 435W)

Rearside Power Gain	5%	10%	20%
Maximum Power at STC (Pmax)	456.8	478.5	522.0
Open-circuit Voltage (Voc/V)	34.7	34.7	38.7
Short-circuit Current (Isc/A)	16.7	17.5	19.0
Maximum Power Voltage (Vmp/V)	29.4	29.4	29.4
Maximum Power Current (Imp/A)	15.6	16.3	17.8
Module Efficiency (%)	22.9	23.9	26.1

*The above data is for reference only. When signing a contract, the latest version of the product specification shall prevail.

Working Parameters

Operating Temperature	-40°C~ +85°C
Power Tolerance	0~ +5W
Maximum System Voltage	1500V(IEC)
NOCT	45±2°C
Maximum Series Fuse Rating	30A
Bifacial Factor	80±5%
Junction Box	IP68

Temperature Ratings (STC)

Temperature coefficient of Isc	+ 0.045%/°C
Temperature coefficient of Voc	- 0.25%/°C
Temperature coefficient of Pmax	- 0.29%/°C

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm hailstone at 23m/s

Gokin



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Product data is updated as of May 2024. Gokin Solar Co., Ltd. reserves the right to change specifications.