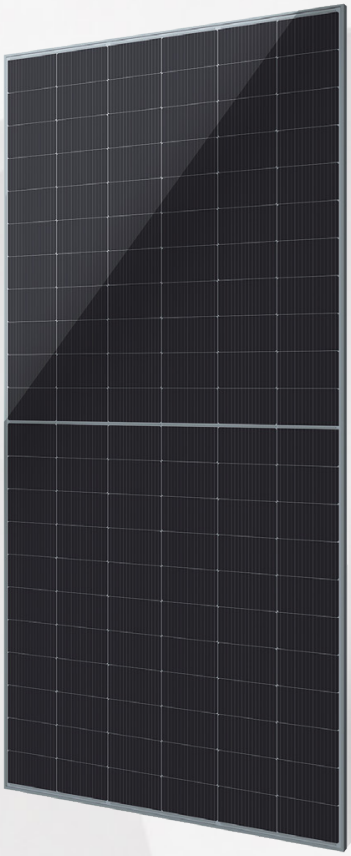
GS ENERGY SYSTEMS
(PRIVATE) LIMITED

LEOPARD G12R/132D

590-620W





Supreme Quality

HIGH EFFICIENCY

Module efficiency up to 23.0% based on N-Type wafer and TOPCon technology

EXCELLENT ENERGY YIELD

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

ANTI-DEGRADATION

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

QUALITY GUARANTEE

High module quality ensures long-term reliability

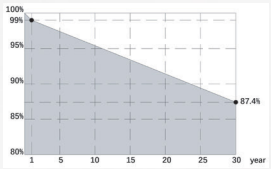
Module Characteristics

12 -Year
Product Warranty

30-Year
Linear Power Warranty

1%
First Year Degradation

0.4%
Annual Power Degradation



At least 87.4% of nominal power up to 30 years



CLEAN ENERGY COUNCIL MEMBER

IEC 61215(2021) / IEC 61730(2023)
ISO 9001: 2015: ISO Quality Management System
Anti-PID / Ammonia / Salt-mist / Dust and sand
Made in China

620W
Maximum Power

23.0%
Highest Conversion Efficiency

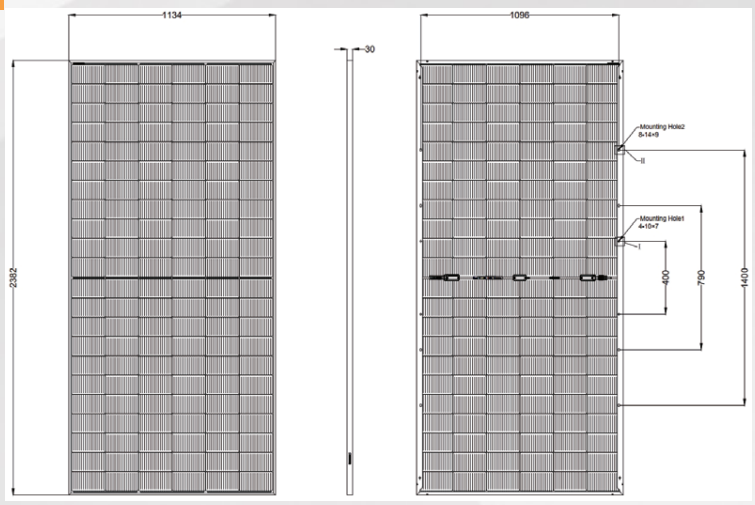
1%
First Year Degradation

0.4%
2-30 Years Annual Power Attenuation

Mechanical Parameters

Cell Type	N-Type TOPCon
No. of cells	132 (2×66)
Output Cables	TüV 1×4mm ²
	(+)300mm,(-)200mm in length or customized length
Glass	Front: 2.0mm, AR-coating, semi-tempered
	Rear: 2.0mm, semi-tempered
Frame	Anodized aluminum alloy frame
Weight	32.4 kg (71.43 lbs)
Dimension	2382×1134×30mm
Packaging	37 pcs per pallet
	Package size(mm): 2396×1130×1259
	148 pcs per 20' HC, 740 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-4-66HTBD-590M		GK-4-66HTBD-595M		GK-4-66HTBD-600M		GK-4-66HTBD-605M		GK-4-66HTBD-610M		GK-4-66HTBD-615M		GK-4-66HTBD-620M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	590	447	595	450	600	454	605	458	610	462	615	466	620	469
Open-circuit Voltage (Voc/V)	47.32	44.81	47.49	44.96	47.66	45.16	47.83	45.28	48.00	45.49	48.17	45.65	48.34	45.81
Short-circuit Current (Isc/A)	15.79	12.73	15.86	12.80	15.93	12.86	16.00	12.92	16.07	12.96	16.14	13.02	16.21	13.16
Maximum Power Voltage (Vmp/V)	39.67	37.55	39.81	37.65	39.95	37.78	40.09	37.91	40.22	38.06	40.35	38.16	40.48	38.31
Maximum Power Current (Imp/A)	14.88	11.90	14.96	11.97	15.03	12.03	15.10	12.08	15.18	12.16	15.25	12.20	15.33	12.27
Module Efficiency (%)	21.8		22.0		22.2		22.4		22.6		22.8		23.0	

Note: 1、STC: Irradiance 1000W/M², Cell Temperature25℃, AM=1.5 2、NOCT: Irradiance 800W/M², Ambient Temperature 20℃, AM=1.5, Wind Speed 1M/S

Different Rearside Power Gain ((Reference to 605W)

Rearside Power Gain	5%	10%	20%
Maximum Power at STC (Pmax)	635.3	665.5	726.0
Open-circuit Voltage (Voc/V)	47.8	47.8	47.8
Short-circuit Current (Isc/A)	16.8	17.6	19.2
Maximum Power Voltage (Vmp/V)	40.1	40.1	40.1
Maximum Power Current (Imp/A)	15.9	16.6	18.1
Module Efficiency (%)	23.5	24.6	26.9

*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℃~ +85℃
Power Tolerance	0~ +5W
Maximum System Voltage	1500V(IEC)
NMOT	45±2℃
Maximum Series Fuse Rating	35A
Bifacial Factor	80±5%
Junction Box	IP68

Temperature Ratings (STC)

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

Mechanical Loading

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

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