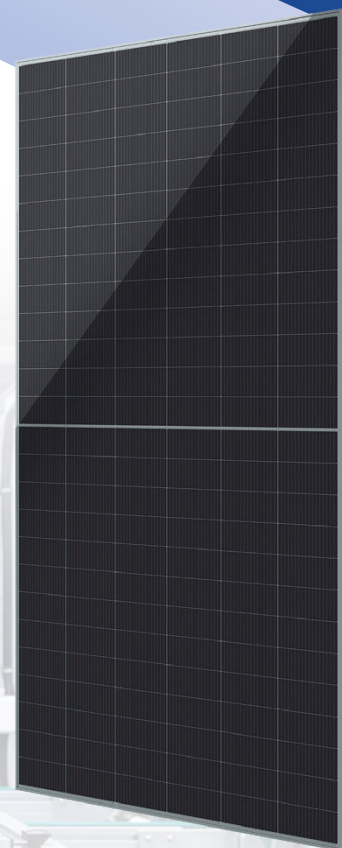


FLAMINGO M10/156D 630-650W



Supreme Quality



High Efficiency

Module efficiency up to 23.3% 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 characteristics of N-Type



Quality Guarantee

High module quality ensures long-term reliability

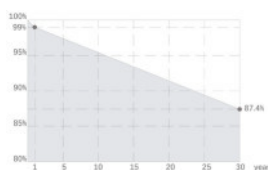
Module Characteristics

15-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



IEC 61215(2021) / IEC 61730(2023)

ISO 9001: 2015: ISO Quality Management System

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

Made in China

650W

Maximum Power

23.3%

Highest Conversion Efficiency

1%

First Year Degradation

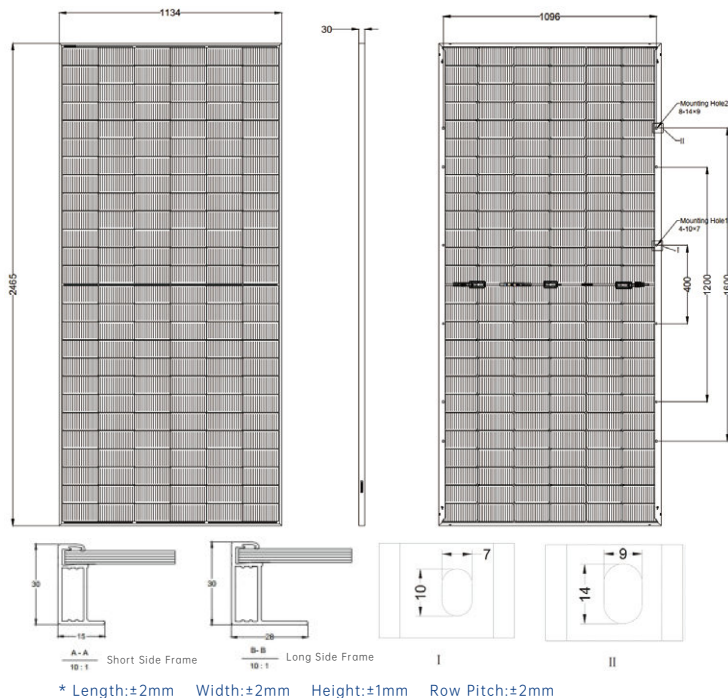
0.4%

2-30 Years Annual Power Attenuation

Mechanical Parameters

Cell Type	N-Type TOPCon
No. of cells	156 (2×78)
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	33.5 kg (73.85 lbs)
Dimension	2465×1134×30mm
Packaging	36 pcs per pallet
	144 pcs per 20' HC, 576 pcs per 40' HC
Protection Class	Class II
Fire Rating	IEC Class A

Engineering Drawings



Electrical Characteristics (STC Test)

Module Type	GK-1-78HTBD-630M		GK-1-78HTBD-635M		GK-1-78HTBD-640M		GK-1-78HTBD-645M		GK-1-78HTBD-650M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (P _{max} /W)	630	477	635	481	640	484	645	488	650	492
Open-circuit Voltage (V _{oc} /V)	56.95	54.05	57.12	54.19	57.29	54.30	57.47	54.39	57.63	54.48
Short-circuit Current (I _{sc} /A)	13.89	11.18	13.95	11.23	14.01	11.29	14.06	11.33	14.11	11.38
Maximum Power Voltage (V _{mp} /V)	47.60	45.14	47.75	45.26	47.90	45.45	48.06	45.58	48.22	45.72
Maximum Power Current (I _{mp} /A)	13.25	10.57	13.31	10.62	13.37	10.66	13.42	10.71	13.48	10.76
Module Efficiency (%)	22.5		22.7		22.9		23.1		23.3	

Note: 1. STC: Irradiance 1000W/M², Cell Temperature 25°C, AM=1.52. NOCT: Irradiance 800W/M², Ambient Temperature 20°C, AM=1.5, Wind Speed 1M/S

Different Rearside Power Gain (Reference to 640W)

Rearside Power Gain	5%	10%	20%
Maximum Power at STC (P _{max})	672.0	704.0	768.0
Open-circuit Voltage (V _{oc} /V)	57.3	57.3	57.3
Short-circuit Current (I _{sc} /A)	14.7	15.4	16.8
Maximum Power Voltage (V _{mp} /V)	47.9	47.9	47.9
Maximum Power Current (I _{mp} /A)	14.0	14.7	16.0
Module Efficiency (%)	24.0	25.2	27.5

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

Temperature Ratings (STC)

Temperature coefficient of I _{sc}	+ 0.045%/°C
Temperature coefficient of V _{oc}	- 0.25%/°C
Temperature coefficient of P _{max}	- 0.29%/°C

Working Parameters

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

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.