



Black Series

# TPC Pro-54HD(BK)

Product Range

## 430-450W

N-Type Full Black Bifacial Double Glass

**450W**

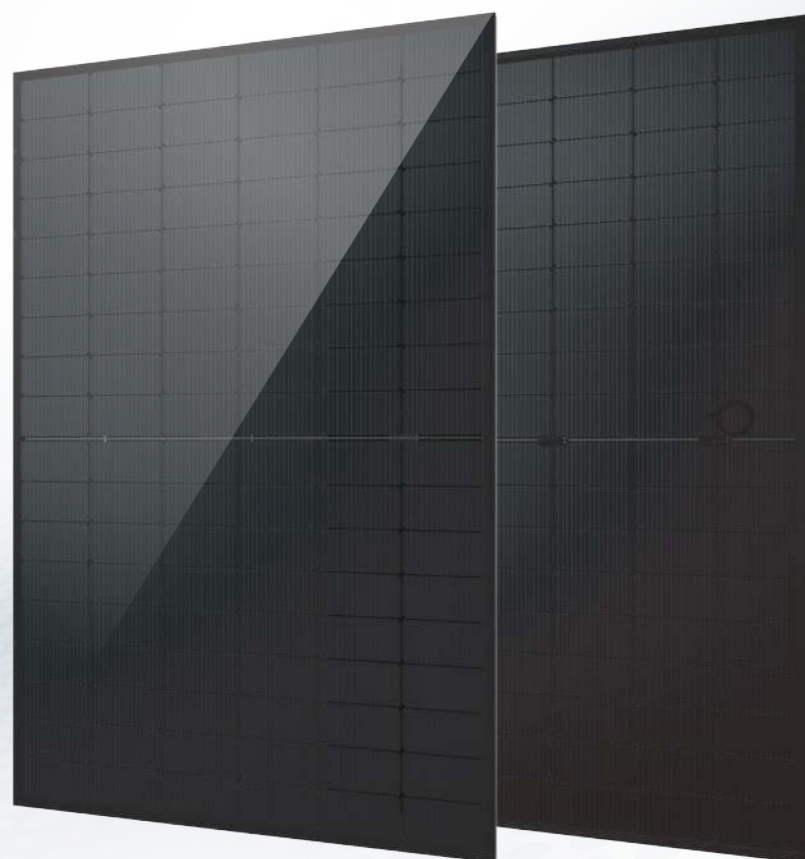
Maximum Power Output

**0~+5W**

Positive Power Tolerance

**23.04%**

Maximum Efficiency



### Double Glass, 182mm, 54-CELL HALF-CUT SERIES

#### ELECTRICAL PARAMETERS AT STC

Module Type: TPC Pro-54HD(BK)	430M / 435M / 440M / 445M / 450M
Maximum Power(Wp)	430W 435W 440W 445W 450W
Open Circuit Voltage(Voc)	39.30V 39.45V 39.60V 39.75V 39.90V
Short Circuit Current(Isc)	13.80A 13.89A 13.98A 14.07A 14.16A
Maximum Power Voltage(Vm)	32.75V 32.90V 33.05V 33.20V 33.35V
Maximum Power Current(I <sub>m</sub> )	13.14A 13.23A 13.32A 13.41A 13.50A
Module Efficiency	22.02% 22.28% 22.53% 22.79% 23.04%
Maximum Series Fuse	25A
Watts Positive Tolerance	0~+5W
Number Of Diode	3
Standard Test Conditions	1000W/M <sup>2</sup> ,25°C,AM1.5
Maximum System Voltage	1500V/DC
Temperature-Coefficient Isc	+0.043%/°C
Temperature-Coefficient Voc	-0.24%/°C
Temperature-Coefficient P <sub>mp</sub>	-0.30%/°C
Operating Temperature	-40°C...+85°C
Normal Operating Cell Temperature	45±2°C
Load Capacity For The Cover Of The Module (Glass)	5400Pa(IEC61215)(snow)
Load Capacity For The Front & Back Of The Module	2400Pa(IEC61215)(wind)

#### 144HC BNPI (1000w/m<sup>2</sup> + 135w/m<sup>2</sup>)

Module Type: TPC Pro-54HD(BK)	430M / 435M / 440M / 445M / 450M
Maximum Power(Wp)	473W 479W 484W 490W 495W
Open Circuit Voltage(Voc)	39.30V 39.45V 39.60V 39.75V 39.90V
Short Circuit Current(Isc)	15.16A 15.28A 15.36A 15.48A 15.59A
Maximum Power Voltage(Vm)	32.76V 32.90V 33.06V 33.20V 33.34V
Maximum Power Current(I <sub>m</sub> )	14.44A 14.56A 14.64A 14.76A 14.85A

#### 144HC BSI (1000w/m<sup>2</sup> + 300w/m<sup>2</sup>)

Module Type: TPC Pro-54HD(BK)	430M / 435M / 440M / 445M / 450M
Maximum Power(Wp)	529W 535W 541W 547W 553W
Open Circuit Voltage(Voc)	39.30V 39.45V 39.60V 39.75V 39.90V
Short Circuit Current(Isc)	16.94A 17.06A 17.17A 17.27A 17.40A
Maximum Power Voltage(Vm)	32.78V 32.90V 33.07V 33.22V 33.36V
Maximum Power Current(I <sub>m</sub> )	16.14A 16.26A 16.36A 16.47A 16.58A

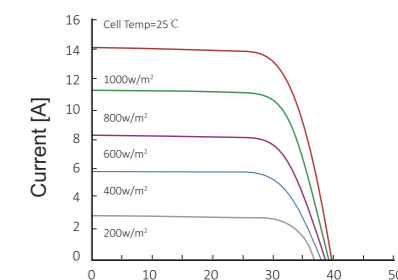
#### MECHANICAL CHARACTERISTICS

Front/Back Cover (Material / Thickness)	low-iron tempered glass 2.0 / 2.0 mm
Cell (Quantity / Material / Dimensions)	108(6x9x2) / monocrystalline silicon,bifacial
Frame (Material / Color)	aluminum hollow-chamber frame on each side anodized aluminum alloy / Black
Junction Box (Protection Degree)	≥IP68
Cables & Plug Connectors	4mm <sup>2</sup> , 300mm in length,length can be customized
Module Dimensions (L / W / H)	1722x1134x30mm
Module Weight	22 kg
Application Class	Class A
Electrical Protection Class	Class II
Fire Safety Class	Class A

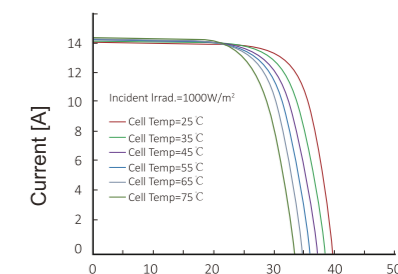
#### PACKING

Container Size	Units/Pallet (PCS)	Weight/Pallet (KG)	Pallet Measurement (mm)	Units/Container (PCS)
40HQ	36	825	1750x1120x1260	936

#### CURRENT-VOLTAGE CURVES:

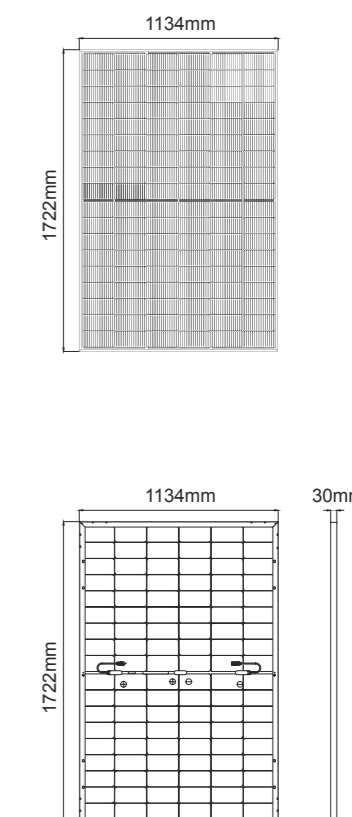


Module characteristics at constant module temperatures of 25°C and variable levels of irradiance



Module characteristics at variable module temperatures and constant module irradiance of 1.000 W/m<sup>2</sup>

#### MODULE DIAGRAM:



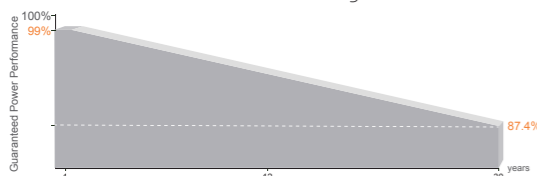
#### Linear Performance Warranty

25 Year Product Warranty

30 Year Linear Power Warranty

<1% First year Power Degradation

<0.4% Year 2-30 Power Degradation



#### MBB Half-Cut Solar Cell

182x91mm, 108 cells.

#### Higher Module Conversion Efficiency

Higher module output up to 450W with module efficiency up to 23.04%.

#### Low-Light Performance

Advanced glass and surface texturing allow for excellent performance in low-light environments.

#### Transparent Dual-glass Design

Excellent fire rating, with better temperature coefficient.

#### Higher Power Output

Module power increases 5-25% generally, bringing significantly lower LCOE and higher IRR.

#### Certifications

Quality Management System and Product Certification.

IEC61215(2021), IEC61730(2023), IEC61701

IEC61215-2 (bifaciality): 2021

ISO9001:2015: Quality Management System

ISO14001:2015: Environment Management System

ISO45001:2018: Occupational health and safety management systems



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