

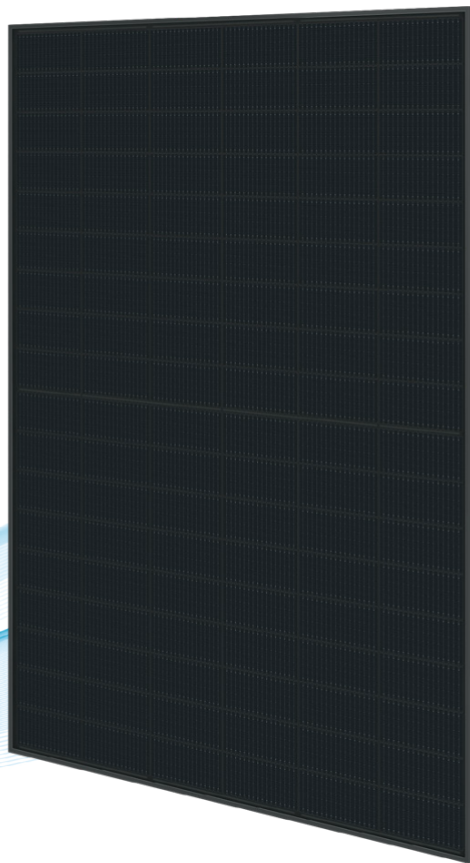
PRELIMINARY

# HD HYUNDAI SOLAR MODULE

## NF(BK) Series

### Premium N-Type TOPCon Module

HiS-T425NF(BK) | HiS-T430NF(BK) | HiS-T435NF(BK)



22.28%  
High Efficiency



High-End  
TOPCon  
Technology



Higher  
Bifaciality



Long-Term  
Reliability



For Residential  
(Full Black Design)

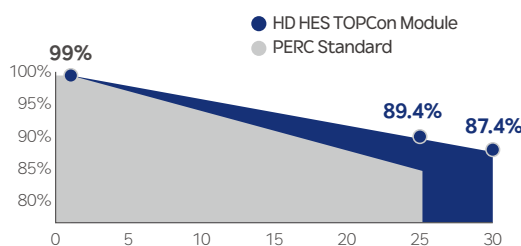
#### HD Hyundai's Warranty Provisions

25  
YEARS

- 25-Year Product Warranty
- Materials and workmanship

30  
YEARS

- 30-Year Performance Warranty
- First year degradation: 1%
- Linear warranty after initial year: with 0.4%p annual degradation, 87.4% is guaranteed up to 30years



\*Refer to HD HES standard warranty for details.

#### Certification



- UL 61215 / UL 61730 / IEC 61215 / IEC 61730 Certified
- ISO 9001 : Quality management systems
- ISO 14001 : Environmental management systems
- ISO 45001 : Occupational health and safety management systems

## Electrical Characteristics

HiS-TxxxNF(BK)		HiS-T425NF(BK)		HiS-T430NF(BK)		HiS-T435NF(BK)	
Item	Unit	BNPI**		BNPI		BNPI	
Nominal output (Pmax)	W	425	470	430	475	435	480
Open circuit voltage (Voc)	V	38.50	38.64	38.70	38.85	38.90	39.05
Short circuit current (Isc)	A	13.95	15.46	14.11	15.63	14.19	15.72
Voltage at Pmax (Vmpp)	V	31.76	31.98	31.85	32.03	32.08	32.21
Current at Pmax (Impp)	A	13.38	14.72	13.50	14.86	13.56	14.95
Module efficiency	%	21.76		22.02		22.28	
Power Class Sorting	W	0 ~ +5					
Temperature coefficient of Pmax	%/K	-0.290					
Temperature coefficient of Voc	%/K	-0.250					
Temperature coefficient of Isc	%/K	0.043					
Bifaciality	%	80±5					

\*STC : Irradiance 1,000 W/m<sup>2</sup>, cell temperature 25°C, AM=1.5 / Measurement uncertainty for Pmax ±3%; Isc; Voc ±5%  
 \*\*The electrical properties of BNPI are measured under the irradiance corresponding to 1000 W/m<sup>2</sup> on the module front and 135 W/m<sup>2</sup> on the module rear.

### Additional Power Gain from rear side

Pmpp gain	Pmpp [W]	Vmpp [V]	Impp [A]	Voc [V]	Isc [A]
5%	452	31.85	14.18	38.70	14.82
15%	495	31.85	15.53	38.70	16.23
25%	538	31.85	16.88	38.70	17.64

\*Electrical characteristics with different rear power gain (reference to 430W)

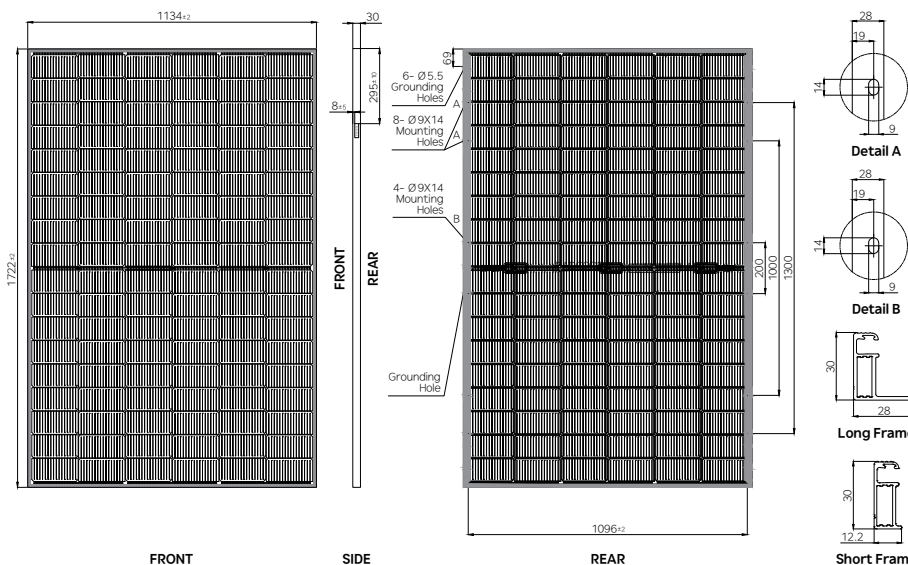
## Mechanical Characteristics

Dimensions	1,722mm (L) x 1,134mm (W) x 30mm (H) (67.8in x 44.6in x 1.2in)
Weight	24.3 kg (53.57 lbs)
Solar Cells	N-Type TOPCon, 108 (6x18) monocrystalline 16BB half-cut bifacial cells
Output Cables	Cable : (+)1,200mm(47.2in), (-)1,200mm(47.2in) / Customized length available Connector : Stäubli MC4 genuine Connector
Junction Box	3-part, 3 bypass diodes, IP68 rated
Construction	Front : 2.0mm(0.08in) semi-tempered solar glass with high transmittance and anti-reflective coating Rear : 2.0mm(0.08in) semi-tempered solar glass
Frame	Anodized aluminum alloy

## Shipping Configurations

Container Size (HC)	40'	Modules Per Pallet (pcs)	36
Pallets Per Container	26	Modules Per Container (pcs)	936

## Module Diagram (unit : mm)



## Installation Safety Guide

- Only qualified personnel should install or perform maintenance.
- Be aware of dangerous high DC voltage.
- Do not handle or install modules when they are wet.

Nominal Module Operation Temperature	41°C ± 2°C
Operating Temperature	-40°C~+85°C
Maximum System Voltage	DC 1,500 V
Maximum Reverse Current	30A
Maximum Test Load	Front 5,400Pa Rear 2,400Pa
Fire Performance	Type 29

## I-V Curves (HiS-T430NF(BK))

