# N-TOPCon

HANERSUN




# Hitouch 6N PLUS

## HN21RN-48HT

# 450-475W

**BIFACIAL**
Full Black Module

**23.8%**
Maximum Efficiency

### Long-Term Reliability

Module certified to withstand 5400 Pa positive static load and 2400 Pa negative static load.

Excellent anti-PID performance to guarantee a better sustainability in harsh environment.

### Higher Power Output

The GEN2 cell technology enables higher efficiency in Hanersun modules.

Better light trapping and current collection to improve module power output and reliability.

### Lower Hot Spot and Crack Risk

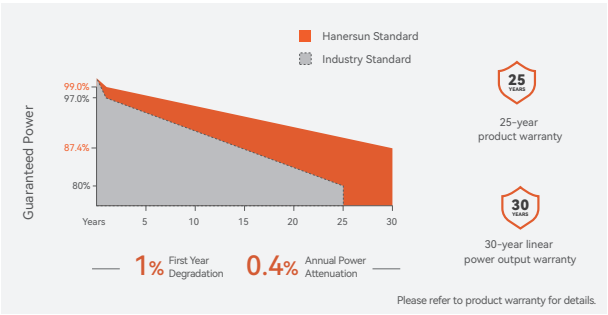
Reduce hot-spot risk with optimized electrical design and lower operating current.

Reduce crack risk by optimization of solar cell design.

### Excellent Temperature Coefficient

Lower operating temperature and temperature coefficient increases the power output.

## Power Warranty




## Certificates

Warranty partner

Munich RE

15Y Product / 30Y Linear Power Warranty under Munich Re insurance.

## About Hanersun

Hanersun is a world-leading clean energy company, focusing on R&D, manufacturing and distribution of solar module and energy storage system, as well as comprehensive clean energy solutions. Committed to high-efficiency technologies, the company is one of the first to launch PV modules of 600W+ and 700W+ in the industry.

## Electrical Characteristics（STC）

| Module Type | HN21RN-48HT450W | HN21RN-48HT455W | HN21RN-48HT460W | HN21RN-48HT465W | HN21RN-48HT470W | HN21RN-48HT475W |
|---|---|---|---|---|---|---|
| Maximum Power (Pmax) | 450 | 455 | 460 | 465 | 470 | 475 |
| Maximum Power Voltage (Vmp) | 29.78 | 29.94 | 30.10 | 30.26 | 30.42 | 30.58 |
| Maximum Power Current (Imp) | 15.12 | 15.20 | 15.29 | 15.37 | 15.46 | 15.54 |
| Open-circuit Voltage (Voc) | 35.73 | 35.93 | 36.13 | 36.33 | 36.53 | 36.73 |
| Short-circuit Current (Isc) | 16.00 | 16.06 | 16.12 | 16.18 | 16.24 | 16.30 |
| Module Efficiency(%) | 22.5% | 22.8% | 23.0% | 23.3% | 23.5% | 23.8% |

STC: Irradiance 1000W/m², Cell Temperature 25℃, Air Mass AM1.5.

Power Tolerance: 0~+3%

## Electrical Characteristics（BNPI）

| Module Type | 450W | 455W | 460W | 465W | 470W | 475W |
|---|---|---|---|---|---|---|
| Maximum Power (Pmax) | 499 | 504 | 510 | 516 | 521 | 527 |
| Maximum Power Voltage (Vmp) | 29.78 | 29.94 | 30.1 | 30.26 | 30.42 | 30.58 |
| Maximum Power Current (Imp) | 16.76 | 16.84 | 16.95 | 17.06 | 17.13 | 17.24 |
| Open-circuit Voltage (Voc) | 35.73 | 35.93 | 36.13 | 36.33 | 36.53 | 36.73 |
| Short-circuit Current (Isc) | 17.73 | 17.79 | 17.87 | 17.93 | 18.00 | 18.07 |

BNPI: Irradiance: Front 1000W/m², Rear 135W/m², Cell Temperature 25℃, Air Mass AM1.5.

## Mechanical Parameters

| | |
|---|---|
| Solar Cells | N-TYPE Monocrystalline(210R) |
| Module Dimensions | 1762*1134*30mm |
| Frame | Anodized Aluminium Alloy |
| Front Glass | 2.0 mm, AR Coating Heat Strengthened Glass |
| Back Glass | 2.0 mm, Heat Strengthened Glass |

| | |
|---|---|
| No. of Cells | 96 [2 x (8 x 6) ] |
| Weight | 24.1kg |
| J-Box | IP68 |
| Connector | Z4S-abcd/MC4-EVO 2A/Others |
| Cables | 4.0mm², 300/300mm (can be customized) |

## Operating Parameters

| | |
|---|---|
| Operational Temperature | -40℃~+70℃ |
| Maximum System Voltage | 1500V DC (IEC) |
| Maximum Series Fuse Rating | 35A |
| Bifacial | 80±5% |
| Fire Class Rating | Class C |

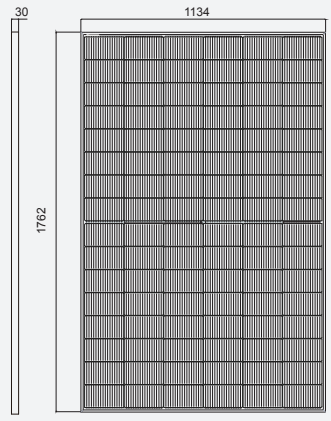
## Temperature Ratings

| | |
|---|---|
| Temperature Coefficient of Pmax | -0.28%/℃ |
| Temperature Coefficient of Voc | -0.23%/℃ |
| Temperature Coefficient of Isc | +0.045%/℃ |

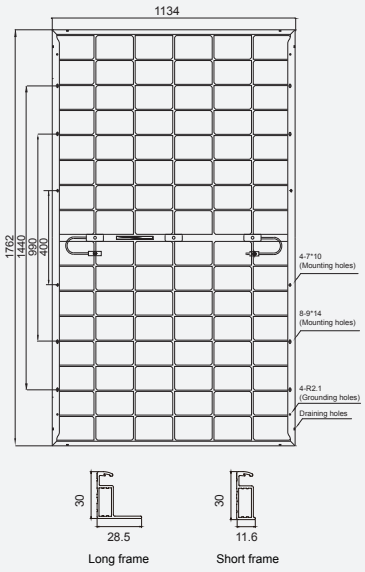
## Packaging

| | |
|---|---|
| Pcs per Pallet: 37 | Pcs per 40' HC: 962 |

## Dimensions (Unit: mm)

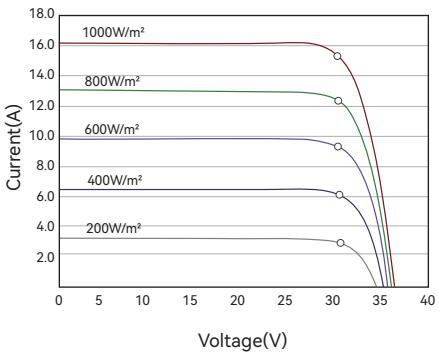



Front View

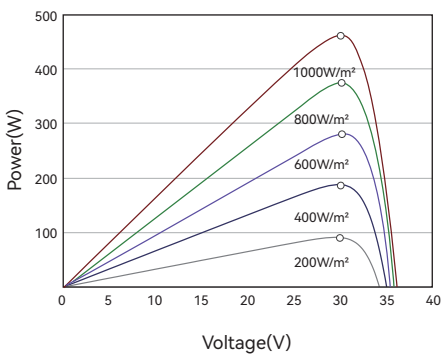



Back View

## I-V Curves of PV Module (465W)




## P-V Curves of PV Module (465W)




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