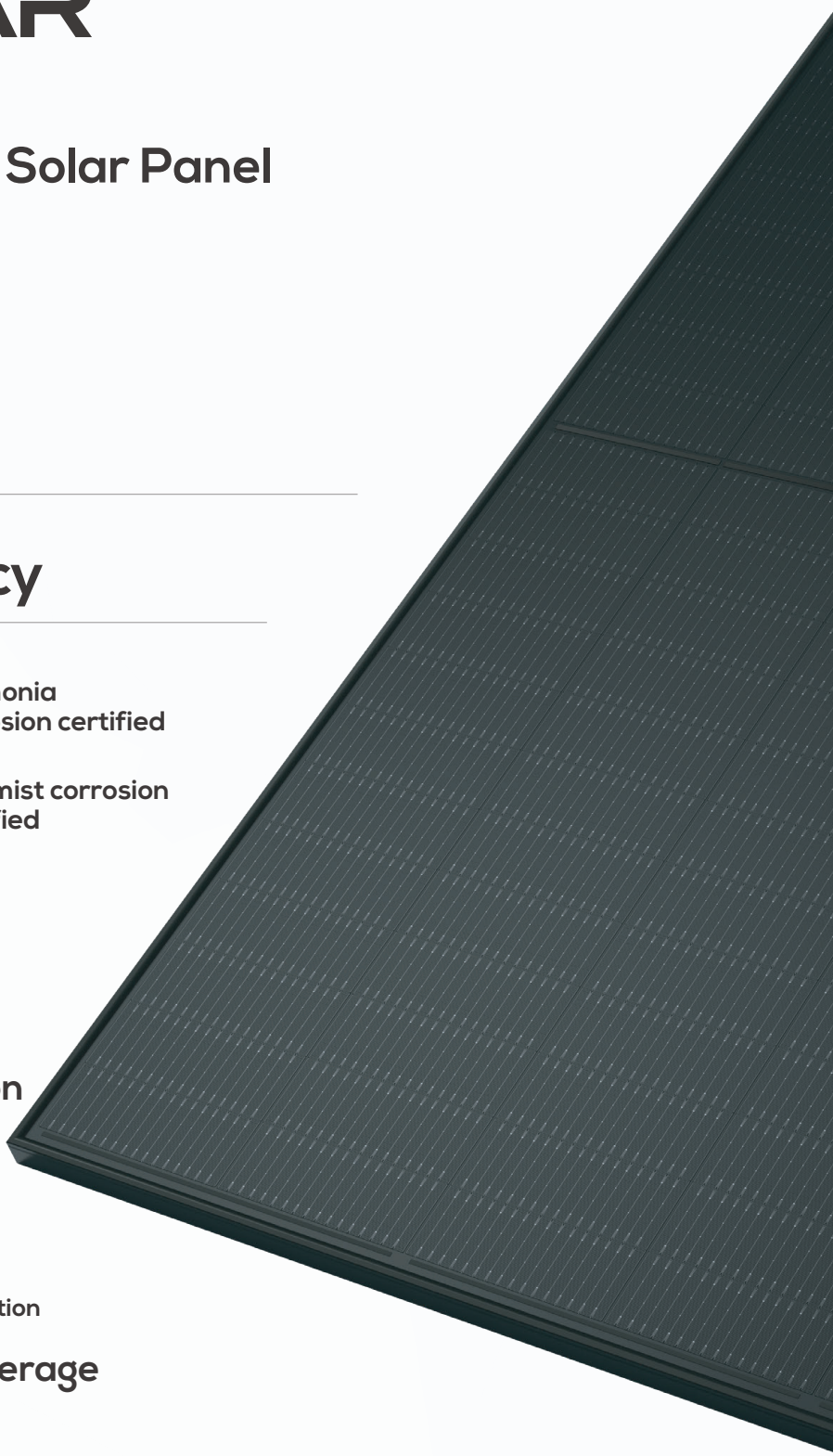
TCL SOLAR

T5 Pro Residential Solar Panel

N-type Monofacial Double Glass Module

HSM-HHK-NM465~470



470W

Maximum Power Output

Up to 23.5% efficiency

- One-third cut, shingled cell design
- Ammonia corrosion certified
- Framed glass-glass
- Salt mist corrosion certified

High energy yield

Excellent thermal resistance and temperature coefficient

Outstanding power generation performance

High lifetime energy production

The shingled-cell design helps to keep cell temperatures low to produce more power over time

Aesthetic experience

Full black module for uniform rooftop integration

Comprehensive warranty coverage

25-year Product warranty
30-year Linear power coverage
99.0% minimum warranted output at Year 1
Maximum annual degradation 0.35%

TIER 1 BloombergNEF

25 PRODUCT | 30 POWER WARRANTY

Comprehensive Products and System Certificates

IEC 61215 / IEC 61730 ISO 9001:2015 ISO 45001:2018 ISO 14001:2015

Learn more about TCL Solar panels
www.tclsolar.com/resources

Made in China
TCL Zhonghuan Energy Technology (Jiangsu) Co., Ltd.

HSM-HHK-NM465-470 | T5 Pro

470W Maximum Power | **23.5%** Maximum Efficiency | **-5W~+10W** Power Tolerance

Electrical Parameters (STC*)

Measurement Tolerance: Pmax (W) ±3%; Voc (V) ±3%; Isc (A) ±4%
* STC: Irradiance 1000W/m², Cell Temperature 25°C, AM1.5

Maximum Power	Pmax (W)	465	470
Open Circuit Voltage	Voc (V)	54.19	54.59
Short Circuit Current	Isc (A)	10.87	10.91
Maximum Power Voltage	Vmp (V)	45.70	46.10
Maximum Power Current	Imp (A)	10.18	10.20
Module Efficiency	(%)	23.3	23.5

Temperature Coefficient

Nominal Module Operating Temperature* *NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s	42±2°C
Temperature Coefficient of Isc	+0.05%/°C
Temperature Coefficient of Voc	-0.22%/°C
Temperature Coefficient of Pmax	-0.26%/°C

Operating Parameters

Operation Temperature	−40°C to +70°C (IEC TS 63126)
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Safety Protection	Class II
Fire Rating	Class A (IEC 61730-2 / UL 790)
Impact Resistance	45mm diameter hail at 27.5 m/s

Mechanical Data

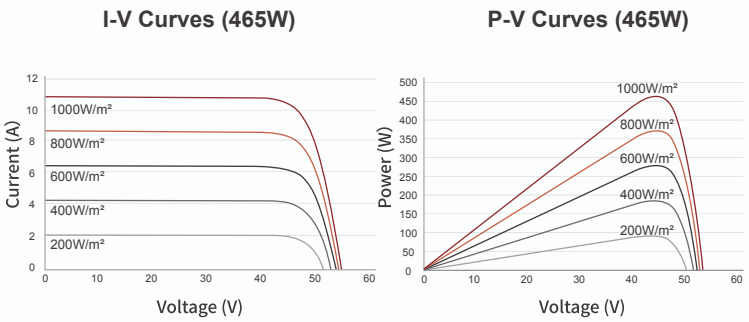
* Please refer to installation manual for details

No.of Cells	144pcs (6x24)
Dimension	1762×1134×30 mm
Weight	24.5kg±3%
Front Glass	2.0mm, Heat Strengthened, AR coating Glass
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Black Anodized Aluminium Alloy
J-Box	IP68, 3 bypass diodes
Cables	4.0mm², +1200mm, -1200mm (can be customized)
Maximum Static Load	Front: 5400Pa/Back: 2400Pa*
Connectors	Stäubli MC4-EVO2A

Packaging Configuration

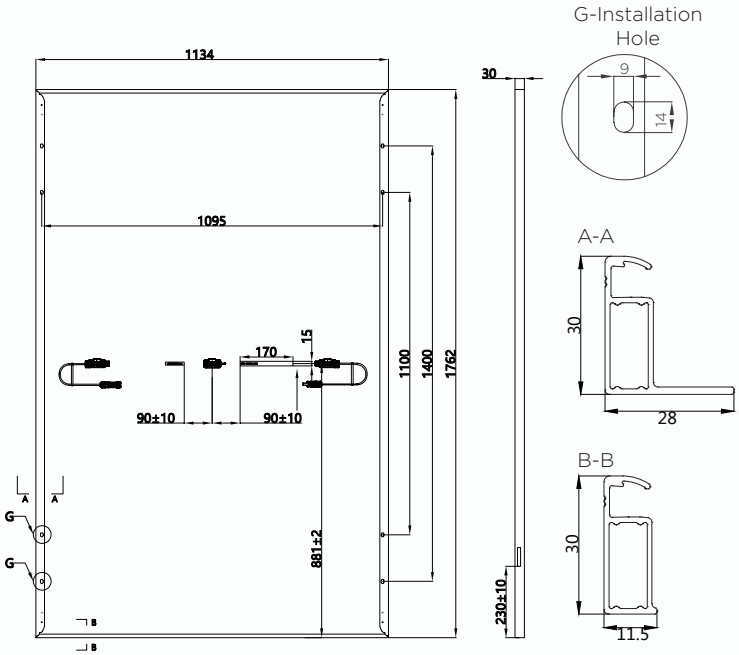
Modules per Pallet	36pcs
Modules per 40'HQ Container	936pcs
Pallets per 40'HQ Container	26pcs

Curve Graph



Engineering Drawing

[Unit: mm]



Please read the safety and installation instructions. Visit www.tclsolar.com/resources
1 Tier1 BloombergNEF based on https://taiyangnews.info/topmodules/top-solarmodules-listing-january-2026.
2 Standard Test Conditions (1000 W/m2 irradiance, AM 1.5, 25° C). NREL calibration Standard: SOMS current, LACCS FF and Voltage.
3 Measurement tolerance is Pmax ± 3%, Voc ±3%, Isc ±4%
4 Test load as per IEC 61215-2 is equal to design load with safety factor = 1.5. See "Safety and Installation Instructions" for details.

TCL SOLAR

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