TCL SOLAR

T5 Pro M

Shingled TOPCon

G12R+-66P
N-type Bifacial
Double Glass Module

HSM-GHF-NM640~665



665W

Maximum Power Output

24.6% Maximum Efficiency

TIER 1 BloombergNEF

Efficient Power Generation

- Lower internal resistance loss : Multi-cut technology reduces operating current
- Advanced TOPCon platform + high-density packaging: High efficiency and bifaciality
- Environmental adaptability: Excellent low-light response and temperature coefficient

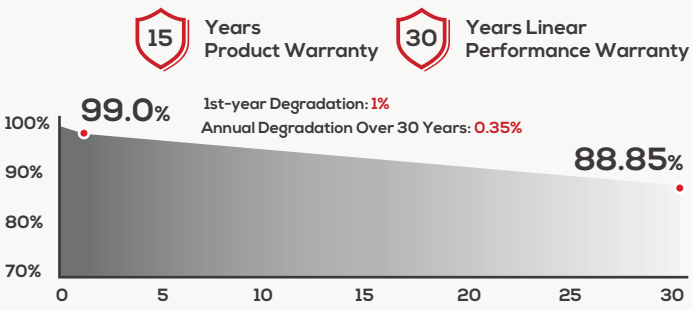
Ultimate Reliability

- Hotspot suppression: Low current design reduces hot spot risk
- High mechanical strength: Optimized back glass openings & Non-Destructive Cutting

Customer Value

- Higher power output: Higher than half-cell modules
- Better ROI: Low BOS, low LCOE, high energy yield, high project returns

Linear Performance Warranty



Comprehensive Products and System Certificates

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

Version: TCL-HSM-2026-B-EN

* Please refer to product warranty for details

HSM-GHF-NM640~665 | Shingled TOPCon

665W Maximum Power | **24.6%** Maximum Efficiency | **0~+3%** Power Tolerance

Electrical Parameters (STC* & BNPI*)

* STC: Irradiance 1000W/m², Cell Temperature 25°C, AM1.5, Measurement tolerance is Pmax ± 3%, Voc ±3%, Isc ±4%
* BNPI: Front Irradiance 1000W/m², Back Irradiance 135W/m², Ambient Temperature 25°C, AM1.5, Measurement tolerance is Pmax ± 3%, Voc ±3%, Isc ±4%

Testing Condition		STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI
Maximum Power	Pmax (W)	640	713	645	719	650	725	655	730	660	736	665	741
Open Circuit Voltage	Voc (V)	49.70	49.70	49.85	49.85	50.00	50.00	50.15	50.15	50.30	50.30	50.43	50.43
Short Circuit Current	Isc (A)	16.10	17.95	16.17	18.03	16.24	18.10	16.31	18.18	16.38	18.26	16.45	18.34
Maximum Power Voltage	Vmp (V)	41.74	41.74	41.87	41.87	42.00	42.00	42.14	42.14	42.27	42.27	42.40	42.40
Maximum Power Current	Imp (A)	15.34	17.10	15.41	17.18	15.48	17.26	15.55	17.33	15.62	17.41	15.69	17.49
Module Efficiency	(%)	23.7		23.9		24.1		24.2		24.4		24.6	

Electrical Characteristics with Different Bifacial Gain*

* The additional gain from the back side depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.
*BSI Test condition: front irradiance 1000 W/m², rear irradiance 300 W/m²
*Measurement tolerance of Bifaciality Coefficients: φPmax/ φIsc: ±10%, φVoc: ±2%

Bifacial Gain		5%	10%	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%
Maximum Power	Pmax (W)	672	704	677	710	683	715	688	721	693	726	698	732
Open Circuit Voltage	Voc (V)	49.70	49.70	49.85	49.85	50.00	50.00	50.15	50.15	50.30	50.30	50.43	50.43
Short Circuit Current	Isc (A)	16.91	17.71	16.98	17.79	17.05	17.86	17.13	17.94	17.20	18.02	17.27	18.10
Maximum Power Voltage	Vmp (V)	41.74	41.74	41.87	41.87	42.00	42.00	42.14	42.14	42.27	42.27	42.40	42.40
Maximum Power Current	Imp (A)	16.11	16.87	16.18	16.95	16.25	17.03	16.33	17.11	16.40	17.18	16.47	17.26
Short Circuit Current @ BSI*	(A)	20.09		20.18		20.26		20.35		20.44		20.53	
Bifaciality Coefficients*		φPmax: 80%, φVoc: 100%, φIsc: 80%											

Temperature Coefficient

Nominal Module Operating Temperature*	43±2°C
Temperature Coefficient of Isc	+0.046%/°C
Temperature Coefficient of Voc	-0.24%/°C
Temperature Coefficient of Pmax	-0.26%/°C

Operating Parameters

Operating Temperature	-40~+70°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Bifaciality	85±5%
Safety Protection	Class II
Fire Rating	Class A
Impact Resistance	45mm diameter hail at 27.5 m/s

Mechanical Data

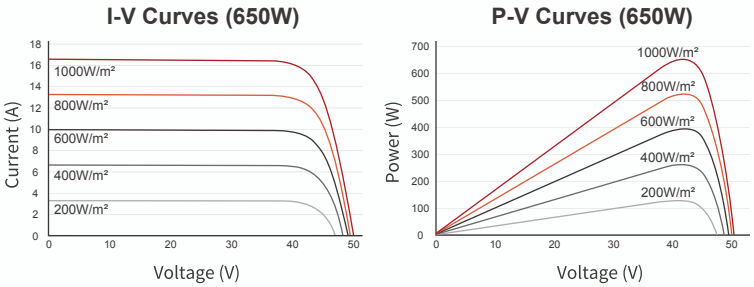
* Please refer to installation manual for details

No.of Cells	198pcs (6×33)
Dimension	2382×1134×30 mm
Weight	32.6kg ±3%
Front Glass	2.0mm, Heat Strengthened, AR coating Glass
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Anodized Aluminium Alloy
J-Box / Diodes	IP68 / three diodes
Cables	4.0mm², +350mm, -280mm (can be customized)
Maximum Static Load	Front: 5400Pa / Back: 2400Pa*
Connector	Stäubli MC4-EVO2A

Packaging Configuration

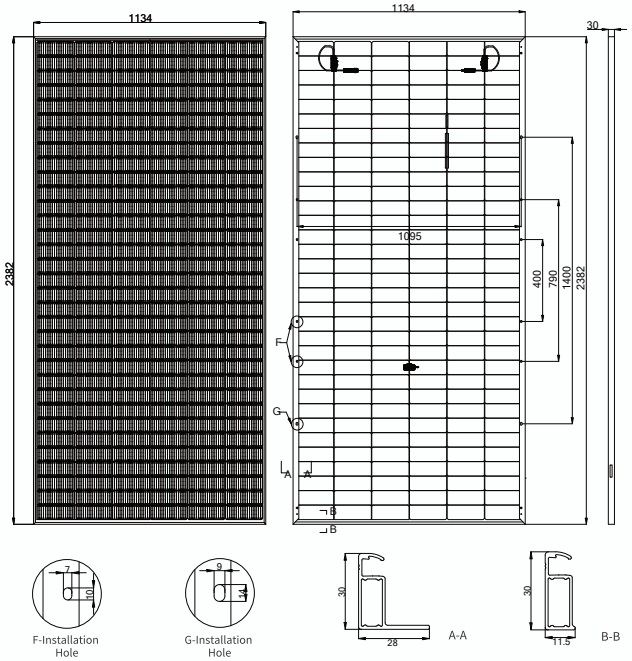
Modules per Pallet	36pcs
Modules per 40'HQ Container	720pcs
Pallets per 40'HQ Container	20pcs

Curve Graph



Engineering Drawing

[Unit: mm]



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