# TCL 210

# TCL-MG680~700DH210-66NT

TOPCon Bifacial High Efficiency PV Module

## PRODUCT FEATURES

**Hi Power Output**
N-type MBB half cut technology, improve energy density, bring higher power output.
High Bifacial Factor, up to 25% extra power generation

**High Durability**
Passed TUV Salt & Ammonia corrosion test, and 2400Pa wind load, 5400Pa snow load test, higher reliability

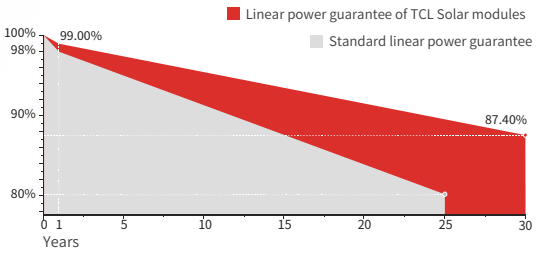
**Better Low Light Performance**
Higher power generation compare with standard module in cloudy, foggy and low light condition

**Low Power Degradation**
First year power degradation <1.0%，year 2-30 <0.40% each year

**Low Temperature coefficient**
Passivated contact cell technology for higher power generation in operating

**Better Anti-PID**
N-type cells with boron-oxide-free composite LID to increase module power generation

## LINEAR PERFORMANCE WARRANTY




15 YEARS product warranty

linear power warranty

0.40 % Linear attenuation of 0.40% per year within 30 years

## CERTIFICATES

·IEC 61215，IEC 61730

·ISO 9001：2015 Quality Management System

·ISO 14001：2015 Environment Management System

·ISO 45001：2018 Occupational health and safety management systems

## Electrical Data (STC)

| | | | | | |
|---|---|---|---|---|---|
| Maximum Power (Pmax/W) | 680 | 685 | 690 | 695 | 700 |
| Open Circuit Voltage (Voc/V) | 46.26 | 46.41 | 46.56 | 46.71 | 46.86 |
| Short Circuit Current (Isc/A) | 18.56 | 18.64 | 18.71 | 18.79 | 18.86 |
| Voltage at Maximum Power (Vmp/V) | 38.25 | 38.40 | 38.55 | 38.7 | 38.85 |
| Current at Maximum Power (Imp/A) | 17.78 | 17.84 | 17.90 | 17.96 | 18.02 |
| Module Efficiency (%) | 21.89 | 22.05 | 22.21 | 22.37 | 22.53 |
| Operating Temperature | -40° C~+85° C | | | | |
| Maximum System Voltage | 1000/1500V DC | | | | |
| Refer.Bifacial Factor | 72±5% | | | | |

STC (Standard Testing Conditions): Irradiance 1000W/m$^2$, Cell Temperature 25°C , AM1.5

## Electrical Data (NMOT)

| | | | | | |
|---|---|---|---|---|---|
| Maximum Power (Pmax/W) | 510 | 514 | 518 | 522 | 526 |
| Open Circuit Voltage (Voc/V) | 43.45 | 43.60 | 43.75 | 43.9 | 44.05 |
| Short Circuit Current (Isc/A) | 15.07 | 15.13 | 15.20 | 15.26 | 15.33 |
| Voltage at Maximum Power (Vmp/V) | 35.74 | 35.89 | 36.04 | 36.19 | 36.34 |
| Current at Maximum Power (Imp/A) | 14.27 | 14.33 | 14.38 | 14.43 | 14.48 |

NMOT (Nominal Moudule Operating Temperature): Irradiance 800W/m$^2$, Ambient Temperature 20°C , AM1.5, Wind Speed 1m/s.

## Bifacial Power Generation Parameters (backside gains)

| | | | | | | |
|---|---|---|---|---|---|---|
| 5% | Maximum Power (Pmax/W) | 714 | 719 | 725 | 730 | 735 |
| | Module Efficiency (%) | 22.99 | 23.15 | 23.32 | 23.49 | 23.66 |
| 15% | Maximum Power (Pmax/W) | 782 | 788 | 794 | 799 | 805 |
| | Module Efficiency (%) | 25.17 | 25.36 | 25.54 | 25.73 | 25.91 |
| 25% | Maximum Power (Pmax/W) | 850 | 856 | 863 | 869 | 875 |
| | Module Efficiency (%) | 27.36 | 27.56 | 27.77 | 27.97 | 28.17 |

## Mechanical Data

| | |
|---|---|
| Cell Type | 210×105mm Mono |
| Cell Orientation | 132(6×22) |
| Module Dimensions | 2384×1303×35mm |
| Weight | 39.0kg |
| Glass | 2.0mm high transmittance, reinforced glass |
| Backsheet | 2.0mm part of the structure is grid-like white ceramic glass |
| Frame Material | Anodized aluminum alloy |
| Junction Box | Protection class IP68 |
| Cable | 4.0 mm$^2$ positive pole: 300mm negative pole: 400 mm<br>wire length can be customized |
| Connector | **MC4 EVO2 & Compatible** |

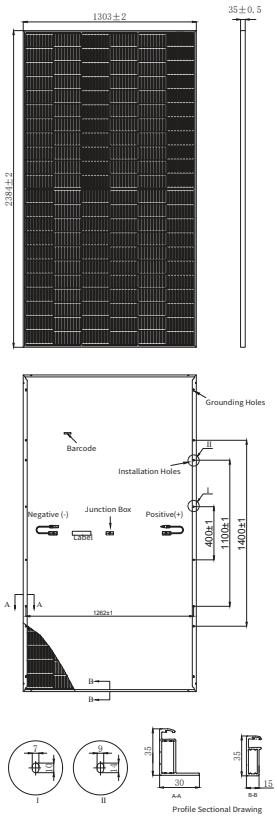
## Temperature Coefficients

| | |
|---|---|
| Temperature Coefficient (Pm) | -0.300%/°C |
| Temperature Coefficient (Voc) | -0.250%/°C |
| Temperature Coefficient (Isc) | 0.046%/°C |
| NMOT (Nominal Moudule Operating Temperature) | 41±3°C |

## Packaging

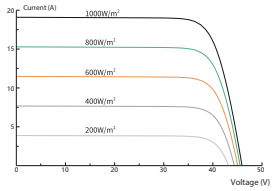
| Transportation methods | Number of modules per cabinet | Number of modules per pallet |
|---|---|---|
| 40HQ container | 527 pcs | 31 pcs |

## Module Dimensions (mm)




## I-V Curve

Current-Voltage Curve(700W)




Power-Voltage Curve(700W)