

TCL SOLAR

E Class Solar Panel

Product: HSM-BD54-GA

465-475 W | Up to 23.8% efficient



Ideal for residential applications



Framed glass-glass



Back contact technology



Bifacial energy generation

High energy yield

- Consistent energy production across all weather conditions
- Bifacial energy generation
- Low temperature coefficient

Elegant design

- Sleek panel aesthetic
- High-durability frame and heat-strengthened glass

Reliable operation

- Rigorous supply chain qualification procedures
- Easy to install
- Backed by a bankable company

Comprehensive warranty coverage

| | |
|---------------------------------|-------------|
| Product and power coverage | 25-30 Years |
| Year 1 minimum warranted output | 99.0% |
| Maximum annual degradation | 0.35% |

TCL SOLAR

Learn more about TCL Solar panels
www.sunpowerglobal.com



E CLASS POWER: 465-475 W | EFFICIENCY: Up to 23.8%

| Electrical Data, Front STC Characteristics ¹ | | | |
|---|----------------|----------------|----------------|
| | HSM-BD54-GA475 | HSM-BD54-GA470 | HSM-BD54-GA465 |
| Nominal Power (P _{nom}) ² | 475 W | 470 W | 465 W |
| Power Binning | +3/0% | +3/0% | 3/0% |
| Panel Efficiency | 23.8% | 23.6% | 23.3% |
| Rated Voltage (V _{mpp}) | 34.80 V | 34.74 V | 34.68 V |
| Rated Current (I _{mp}) | 13.66 A | 13.54 A | 13.41 A |
| Open-Circuit Voltage (V _{oc}) ² | 41.24 V | 41.18 V | 41.12 V |
| Short-Circuit Current (I _{sc}) ² | 14.35 A | 14.32 A | 14.29 A |

| BNPI Data ³ | | | |
|---|---------|---------|---------|
| Nominal Power (P _{max}) ² | 495 W | 490 W | 485 W |
| Open-Circuit Voltage (V _{oc}) ² | 41.24 V | 41.18 V | 41.12 V |
| Short-Circuit Current (I _{sc}) ² | 15.19 A | 15.13 A | 15.03 A |

| Bifacial Gain ⁴ | | | |
|---|---------|---------|---------|
| P _{max} with 5% Bifacial Gain | 499 W | 494 W | 488 W |
| I _{sc} with 5% Bifacial Gain | 15.07 A | 15.04 A | 15.00 A |
| P _{max} with 10% Bifacial Gain | 523 W | 517 W | 512 W |
| I _{sc} with 10% Bifacial Gain | 15.79 A | 15.75 A | 15.72 A |

| Electrical Data | |
|--|-------------------------------|
| Bifaciality (ϕP _{max} /ϕI _{sc}) | 75% +/-5% |
| Bifaciality (ϕV _{oc}) | 98% +/-2% |
| Maximum System Voltage | 1500 V IEC |
| Testing Temperature | -40°C to +85°C |
| Operation Temperature | -40°C to +70°C (IEC TS 63126) |
| Maximum Series Fuse | 25 A |
| Power Temp. Coef. | -0.26% / °C |
| Voltage Temp. Coef. | -0.22% / °C |
| Current Temp. Coef. | 0.05% / °C |

| Packaging Configuration | |
|---|-----|
| Number of modules per pallet | 37 |
| Number of pallets per 40ft HQ container | 26 |
| Number of modules per container | 962 |

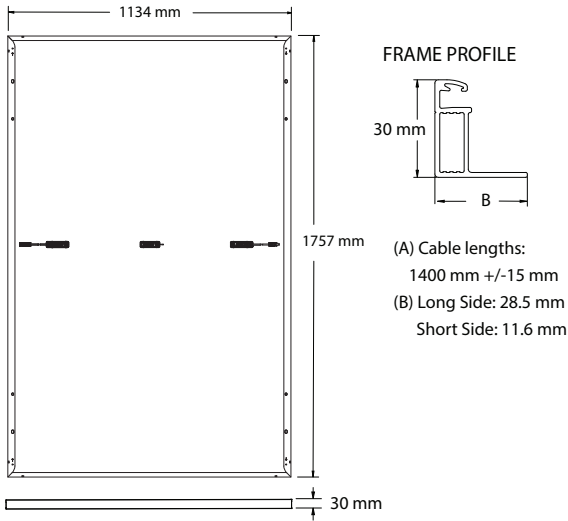
| Tests And Certifications | |
|--------------------------|--|
| Standard Tests | IEC 61215, IEC 61730 |
| Fire Rating | Class A (IEC 61730-2 / UL 790) |
| Protection Class | Class II (IEC 61140) |
| Quality Certs | ISO 9001:2015, ISO 14001:2015 |
| EHS Compliance | ISO 45001:2018, ISO 50001:2018, Recycling Scheme |



1 Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25° C). NREL calibration Standard: SOMS current, LACCS FF and Voltage.
2 Measurements tolerance +/-3%.
3 BNPI Test Condition (front 1000 W/m², rear 135W/m² irradiance, AM 1.5, 25° C).
4 The additional gain from the back side of the panel compared to the power of the front side of the panel at the standard test conditions. It depends on mounting (structure, height, tilt angle etc.) and albedo of the underlying surface.
5 Test load as per IEC 61215-2 is equal to design load with safety factor = 1.5. See "Safety and Installation Instructions" for details.

Specifications included in this datasheet are subject to change without notice.
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| Mechanical Data | |
|------------------------|---|
| Solar Cells | N-Type Back Contact |
| Glass | 2.0 mm + 2.0 mm, high transmission heat strengthened glass, AR coating on front glass |
| Junction Box | IP-68, 3 bypass diodes |
| Connector | Stäubli MC4-EVO2A |
| Weight | 24.2 kg |
| Max. Load ⁵ | Wind: 2400 Pa, 245 kg/m ² front & back Snow: 5400 Pa, 550 kg/m ² front |
| Impact Resistance | 25 mm diameter hail at 23 m/s |
| Frame | Black Anodized Aluminum Alloy |



Please read the safety and installation instructions.
Visit www.sunpowerglobal.com/PVInstallGuide.
Paper version can be requested through
techsupport.EN@sunpowerglobal.com

