



C2 Black Solar Panel

Product: HSM-BE54-DD

480-495 W | Up to 24.3 % efficiency



Ideal for
residential
applications



Back-contact
gapless
technology



Framed glass-
glass with
black tint

Trusted Performance

More energy from your system

Industry leading back-contact manufacturing

Lower operating temperature

Trusted Reliability

Shading resistant

Built reduced risk of micro-cracks

Reinforced circuit design

Trusted Design

Strong technology and IP

Premium Aesthetics

Busbar free front side

Comprehensive warranty coverage

Product and power coverage 25-30 Years

Year 1 minimum warranted output 99.0 %

Maximum annual degradation 0.35 %



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



Electrical Data – STC¹ and BNPI³

Test Conditions		STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI
Maximum Power ²	P _{max} (W)	480	525	485	531	490	536	495	542
Power Binning	(%)	+3/0	+3/0	+3/0	+3/0	+3/0	+3/0	+3/0	+3/0
Rated Voltage	V _{mp} (V)	33.53	33.53	33.64	33.64	33.75	33.75	33.86	33.86
Rated Current	I _{mp} (A)	14.32	15.67	14.42	15.78	14.52	15.89	14.62	16.00
Open-Circuit Voltage ²	V _{oc} (V)	40.34	40.34	40.45	40.45	40.56	40.56	40.66	40.66
Short-Circuit Current ²	I _{sc} (A)	15.08	16.50	15.18	16.61	15.28	16.72	15.38	16.83
Panel Efficiency	(%)	23.5		23.8		24.0		24.3	

Electrical Characteristic with Different Bifacial Gain⁴

Bifacial Gain Conditions		5 %	10 %	5 %	10 %	5 %	10 %	5 %	10 %
Maximum Power	P _{max} (W)	504	528	509	534	515	539	520	545
Rated Voltage	V _{mp} (V)	33.53	33.53	33.64	33.64	33.75	33.75	33.86	33.86
Rated Current	I _{mp} (A)	15.04	15.75	15.14	15.86	15.25	15.97	15.35	16.08
Open-Circuit Voltage	V _{oc} (V)	40.34	40.34	40.45	40.45	40.56	40.56	40.66	40.66
Short-Circuit Current	I _{sc} (A)	15.83	16.59	15.94	16.70	16.04	16.81	16.15	16.92

Electrical Data

Power Bifaciality	70±5 %
Maximum System Voltage	1500 V DC
Testing Temperature	-40 °C to +85 °C
Operating Temperature	-40 °C to +70 °C (IEC TS 63126)
Maximum Series Fuse Rating	30 A
Temperature Coefficient of P _{max}	-0.26 %/°C
Temperature Coefficient of V _{oc}	-0.22 %/°C
Temperature Coefficient of I _{sc}	+0.050 %/°C

Mechanical Data

Solar cells	N-Type Back Contact
Glass	2.0 mm + 2.0 mm, semi tempered glass AR coating on front glass
Junction Box	IP68 / three diodes
Connector	Stäubli EVO2A
Weight	26.0 kg ±3 %
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

Packaging Configuration

Number of modules per pallet	36 pcs
Number of pallets per 40ft HQ container	26 pcs
Number of modules per container	936 pcs

Tests and Certifications

Standard Tests	IEC 61215, IEC 61730
Fire Rating	Class C (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



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

- 1 Standard Test Conditions (1000 W/m² irradiance, AM1.5, 25 °C).
NREL calibration Standard: SOMS current, LACCS FF and Voltage.
- 2 Measurements tolerance +/-3 %.
- 3 BNPI Test Condition (front 1000 W/m², rear 135 W/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.

Engineering Drawing

[Unit: mm]

