

Black Series

## ECO-RA54HD(BK)

Full-Black Hochleistungsmodule

# 440-460W

**N-Type Bifazial**

Glas - Glas für hohe Effizienz



**23.02%**

Wirkungsgrad

**0~+5W**

Minimale Toleranz

**460W**

Maximale Output Power



### Leistungs- & Produktgarantie

25 Jahre Produktgarantie

30 Jahre Leistungsgarantie

<0.1% Degradation im 1ten Jahr

<0.4% Degradation vom 2ten bis 30ten Jahr



### MBB Half-Cut Technologie

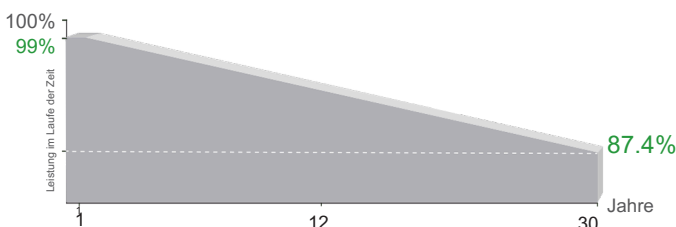
182x94mm, 108 Zellen auf 1.13m x 1.76m



### Maximale Effizienz

Bis zu 460W Leistung mit einem Wirkungsgrad von 23.02%

### Leistungsverlauf



### Durchlässige Glas - Glas Module

Hohe Ertrag auch bei leichten Verschattungen durch Bifazialität



### Zertifizierungen

Hoher Qualitätsanspruch | Zertifiziert & Geprüft



### Ideal für jeden Bereich

Platzsparende und leichte Module mit einem Gewicht von nur 22.5KG



## Doppel-Glas, 54-CELL HALF-CUT SERIE

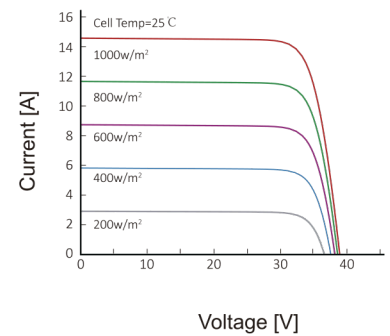
Technische Daten				
Module Type:ERA-RA54HD(BK)	445M	/ 450M	/ 455M	/ 460M
Maximum Power(Wp)	445W	450W	455W	460W
Open Circuit Voltage(Voc)	39.10V	39.30V	39.50V	39.65V
Short Circuit Current(Isc)	14.40A	14.48A	14.56A	14.64A
Maximum Power Voltage(Vm)	32.65V	32.82V	33.00V	33.17V
Maximum Power Current(Im)	13.63A	13.71A	13.79A	13.87A
Module Efficiency	22.27%	22.52%	22.77%	23.02%
Maximum Series Fuse	25A			
Watts Positive Tolerance	0~+5W			
Number Of Diode	3			
Standard Test Conditions	1000W/M <sup>2</sup> ,25°C,AM1.5			
Maximum System Voltage	1500V/DC			
Temperature-Coefficient Isc	+0.046%/°C			
Temperature-Coefficient Voc	-0.26%/°C			
Temperature-Coefficient Pmpp	-0.30%/°C			
Operating Temperature	-40°C...+85°C			
Normal Operating Cell Temperature	45±2			
Load Capacity For The Cover Of The Module (Glass)	3600Pa(IEC61215)(snow)			
Load Capacity For The Front & Back Of The Module	2400Pa(IEC61215)(wind)			

108HC BNPI (1000w/m <sup>2</sup> + 135w/m <sup>2</sup> )					
Module Type:ECO-RA54HD(BK)	440M	/ 445M	/ 450M	/ 455M	/ 460M
Maximum Power(Wp)	484W	490W	495W	501W	506W
Open Circuit Voltage(Voc)	38.93V	39.11V	39.32V	39.51V	39.65V
Short Circuit Current(Isc)	15.74A	15.84A	15.93A	16.02A	16.09A
Maximum Power Voltage(Vm)	32.49V	32.67V	32.83V	33.01V	33.16V
Maximum Power Current(Im)	14.90A	15.00A	15.08A	15.18A	15.26A

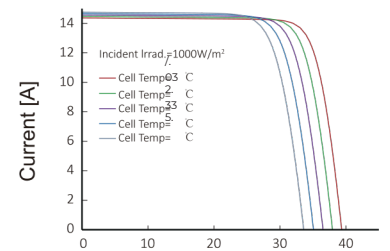
108HC BSI (1000w/m <sup>2</sup> + 300w/m <sup>2</sup> )							
Module Type:ECO-RA54HD(BK)	440M	/ 445M	/ 450M	/ 455M	/ 460M		
Maximum Power(Wp)	541W	547W	554W	560W	566W	572W	578W
Open Circuit Voltage(Voc)	39.32V					39.54V	39.75V
Short Circuit Current(Isc)	17.60A	17.71A	17.81A	17.91A	18.00A		
Maximum Power Voltage(Vm)	32.49V	32.67V	32.84V	33.04V	33.20V		
Maximum Power Current(Im)	16.66A	16.75A	16.85A	16.95A	17.05A		

Weitere Merkmale	
Front/Back Cover (Material / Thickness)	low-iron tempered glass 2.0 / 2.0 mm
Cell (Quantity / Material / Dimensions)	108 (6x18) / monocrystalline silicon
Frame (Material / Color)	aluminum hollow-chamber frame on each side anodized aluminum alloy / Black
Junction Box (Protection Degree)	≥IP68
Cables & Plug Connectors	4mm <sup>2</sup> , 300mm in length,length can be customized
Module Dimensions (L / W / H)	1762(±2)x1134(±2)x30(±1)mm
Module Weight	22.5 kg
Application Class	Class A
Electrical Protection Class	Class II
Fire Safety Class	Class A

## Strom & Spannungsverlauf



Module characteristics at constant module temperatures of 25°C and variable levels of irradiance



Module characteristics at variable module temperatures and constant module irradiance of 1.000 W/m<sup>2</sup>

## Modul - Abmessungen

