

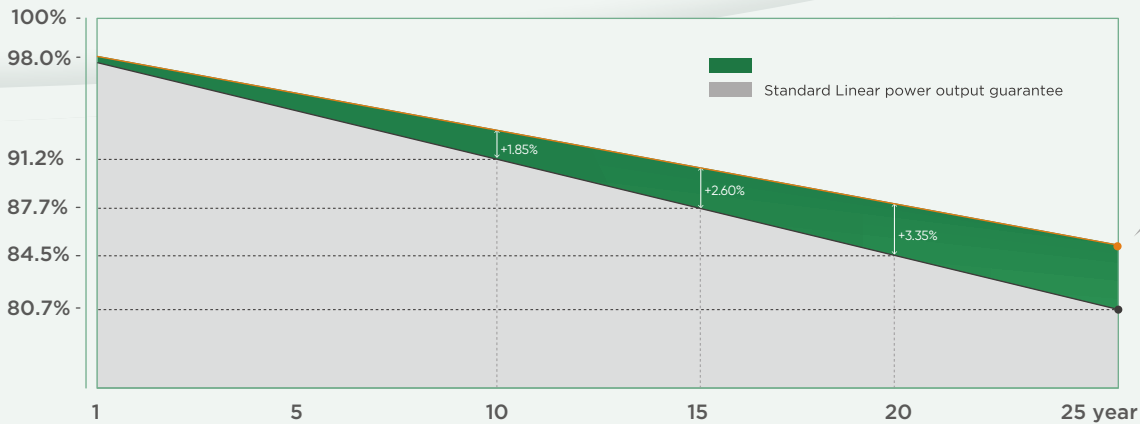
 ALL BLACK

# 405~425W

182mm Cells MonoAll  
Black PERC with 16 BB &  
Half-cut Technology

## Quality Guarantee

15-year Warranty for Materials and Processing  
25-year Warranty for Extra Linear Power Output



84.80%

21.76%  
Max Module Eff.

0~+5W  
Positive Tolerance

### Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730  
ISO 9001:2008: ISO Quality Management System  
ISO 14001: 2004: ISO Environment Management System  
OHSAS 18001: 2007 Occupational Health and Safety



Positive power tolerance (0~+5W) guaranteed

High module conversion efficiency ( up to 21.76%)

Slower power degradation enabled by Low LID Mono PERC technology: first year <2%, 0.55% year 2-25

Solid PID resistance ensured by solar cell process optimization and careful module BOM selection

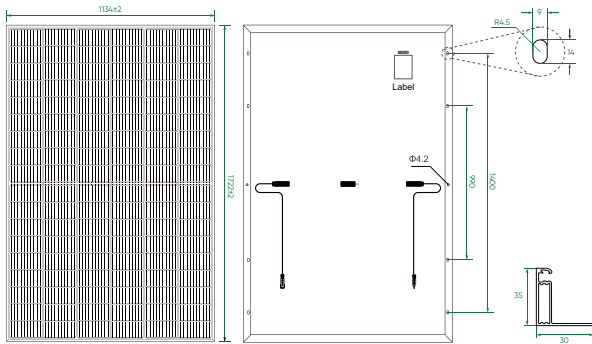
Reduced resistive loss with lower operating current

Higher energy yield with lower operating temperature

Reduced hot spot risk with optimized electrical design and lower operating current

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## Design (mm)



\*Units: mm \*Tolerance: ±2mm

<b>Cell Orientation</b>	108 (2x54)
<b>Junction Box</b>	IP68, three diodes
<b>Output Cable</b>	4mm <sup>2</sup> , 300mm in length, length can be customized
<b>Glass</b>	Single glass 3.2mm coated tempered glass
<b>Frame</b>	Anodized aluminum alloy frame
<b>Weight</b>	20.5kg±3%
<b>Dimension</b>	1722×1134×30mm
<b>Packaging</b>	36pcs per pallet 936pcs per 40'GP

<b>Operational Temperature</b>	-40°C~+85°C
<b>Power Output Tolerance</b>	0~+5W
<b>Voc &amp; Isc Tolerance</b>	±3%
<b>Max. System Voltage</b>	DC1500V(IEC/UL)
<b>Max. Series Fuse Rating</b>	25A
<b>NOCT</b>	45±2°C
<b>Safety Class</b>	II
<b>Fire Rating</b>	UL type 1 or 2
<b>Max. Static Load(Front)</b>	5400Pa
<b>Max. Static Load(Back)</b>	2400Pa

## Electrical Characteristics

Model Number	405M-54HB		410M-54HB		415M-54HB		420M-54HB		425M-54HB	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
<b>Maximum Power (Pmax/W)</b>	405	302	410	306	415	310	420	314	425	318
<b>Open Circuit Voltage (Voc/V)</b>	37.06	34.98	37.14	35.06	37.22	35.14	37.3	35.22	37.38	35.3
<b>Short Circuit Current (Isc/A)</b>	13.85	11.19	13.92	11.25	13.99	11.31	14.06	11.37	14.13	11.43
<b>Voltage at Maximum Power (Vmp/V)</b>	30.52	28.58	30.62	28.74	30.72	28.9	30.82	29.06	30.92	29.22
<b>Current at Maximum Power (Imp/A)</b>	13.27	10.57	13.39	10.65	13.51	10.73	13.63	10.81	13.75	10.89
<b>Module Efficiency(%)</b>	20.75		21		21.26		21.51		21.76	
<b>Temperature Coefficient of Isc</b>	+0.04%/°C									
<b>Temperature Coefficient of Voc</b>	-0.25%/°C									
<b>Temperature Coefficient of Pmax</b>	-0.34%/°C									

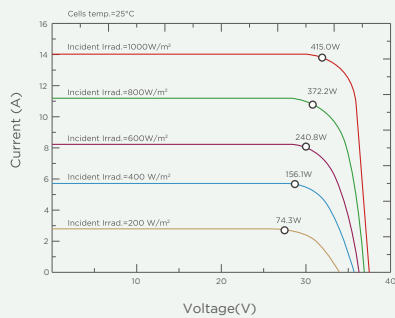
\* STC (Standard Testing Conditions): Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Spectra at AM1.5

\* NOCT (Nominal Operating Cell Temperature): Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Spectra at AM1.5, Wind at 1m/s

\*Test uncertainty for Pmax: ±3%

## I-V Curve

Current-Voltage Curve(415M-54HB)



Power-Voltage Curve(415M-54HB)

