

**TWMND-54HS415-435W**



**Celdas**

108



**Eficiencia**

Hasta 22,3 %



**Dimensiones del  
módulo**

1722 X 1134 X 30 mm



**Características  
del módulo**

Black Frame



**Packaging**

36 módulos por pallet,  
936 módulos por 40'HC



**Tecnología**

N-Type



**Garantía del  
producto**

12 años de garantía



**Garantía del  
rendimiento**

30 años de garantía



# TWMND-54HS415-435W

N-type Half-cell Monofacial Black Frame Module (54)

## PRODUCT FEATURES



High Power Output  
Low LCOE



Maximum Power  
435W+



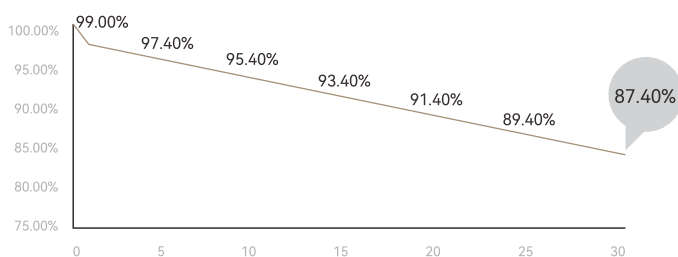
High  
Reliability



Low  
LID

## POWER WARRANTY

1st year <1%, 0.4% power degradation per year from 2 to 30 years



12-year Warranty for Materials



30-year Warranty for Linear Power Output

## MANAGEMENT SYSTEM AND PRODUCT CERTIFICATION

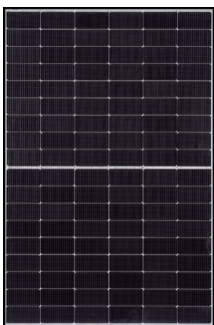
ISO9001: 2015/Quality Management System

ISO14001: 2015/Environment Management System

ISO45001: 2018/Occupational Health and Safety Management System



Front



Rear



## Electrical Characteristics (STC)

Module Type: TWMND-54HSXXX

|                                                                                                           |       |       |       |       |       |
|-----------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|
| Maximum Power: Pmax [W]                                                                                   | 415   | 420   | 425   | 430   | 435   |
| Open Circuit Voltage: Voc [V]                                                                             | 37.85 | 38.00 | 38.15 | 38.30 | 38.45 |
| Short Circuit Current: Isc [A]                                                                            | 14.22 | 14.27 | 14.32 | 14.37 | 14.42 |
| Voltage at Maximum Power: Vmp [V]                                                                         | 31.25 | 31.41 | 31.57 | 31.73 | 31.89 |
| Current at Maximum Power: Imp [A]                                                                         | 13.28 | 13.37 | 13.46 | 13.55 | 13.64 |
| Module Efficiency: $\eta$ [%]                                                                             | 21.3  | 21.5  | 21.8  | 22.0  | 22.3  |
| STC: Irradiance 1000W/m <sup>2</sup> , Cell Temperature 25°C, Air Mass1.5, Measuring Tolerance: $\pm 3\%$ |       |       |       |       |       |

## Electrical Characteristics (NMOT)

|                                                                                               |       |       |       |       |       |
|-----------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|
| Maximum Power: Pmax [W]                                                                       | 312.0 | 316.0 | 320.0 | 324.0 | 328.0 |
| Open Circuit Voltage: Voc [V]                                                                 | 35.98 | 36.14 | 36.30 | 36.46 | 36.62 |
| Short Circuit Current: Isc [A]                                                                | 11.51 | 11.57 | 11.63 | 11.69 | 11.75 |
| Voltage at Maximum Power: Vmp [V]                                                             | 29.18 | 29.34 | 29.50 | 29.66 | 29.82 |
| Current at Maximum Power: Imp [A]                                                             | 10.69 | 10.77 | 10.85 | 10.92 | 11.00 |
| NMOT: Irradiance 800W/m <sup>2</sup> , Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s |       |       |       |       |       |

## Mechanical Parameters

|                  |                                                           |
|------------------|-----------------------------------------------------------|
| Cells            | TNC                                                       |
| Cell Orientation | 108[6X18]                                                 |
| Dimension        | 1722 $\pm 2$ X 1134 $\pm 2$ X 30mm                        |
| Weight           | 20.5kg                                                    |
| Front Glass      | 3.2mm high transmittance, AR coated tempered glass        |
| Backsheet        | White                                                     |
| Frame            | Anodized aluminum alloy black frame                       |
| Junction Box     | IP68, 3 diodes                                            |
| Output Cable     | 4.0mm <sup>2</sup>                                        |
| Cable Length     | +400mm, -200mm or $\pm 1200$ mm, length can be customized |
| Wind/Snow Load   | 2400Pa/5400Pa                                             |
| Packaging        | 36pcs per pallet, 936pcs per 40'HC                        |

## Operating Parameters

|                            |             |
|----------------------------|-------------|
| Operational Temperature    | -40°C~+85°C |
| Maximum System Voltage     | 1500V DC    |
| Maximum Series Fuse Rating | 25A         |
| Power Output Tolerance     | 0~+5W       |

## Temperature Ratings

|                                |               |
|--------------------------------|---------------|
| Temperature Coefficient (Pmax) | -0.30%/°C     |
| Temperature Coefficient (Voc)  | -0.25%/°C     |
| Temperature Coefficient (Isc)  | +0.046%/°C    |
| NMOT                           | 45 $\pm 2$ °C |

## Drawings (Unit: mm)

