

## High Performance Half-Cut Cell Photovoltaic Modules

**5BB PERC MONO CRYSTALLINE MODULE**  
**400W-405W-410W-415W**

### Key Features:



Half Cell Technology



Lower The Risk Of Hot Spot



Higher Power Output



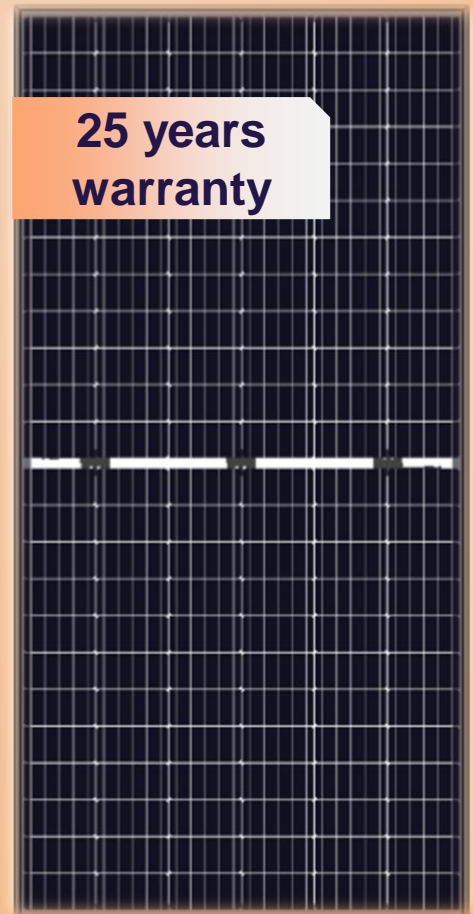
High Snow (5400Pa) and Wind Loads (2400Pa)



Dual EL Inspection



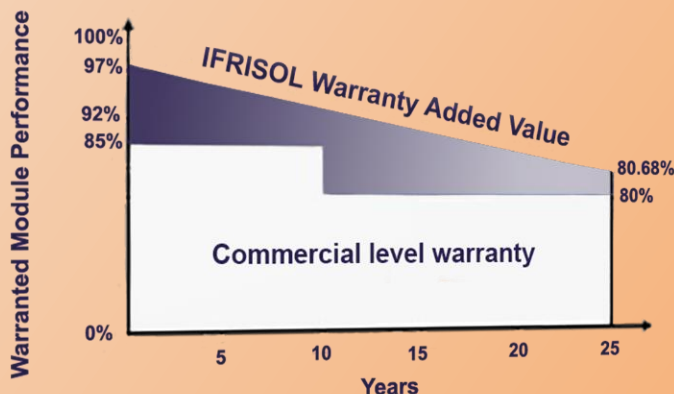
Excellent Low Light Performance



### Linear High Performance Guaranteed

10 Years Product Warranty on 90.88% of the Nominal Performance<sup>1</sup>

25 Years Linear Power Output Warranty on 80.68% of the Nominal Performance<sup>1</sup>



<sup>1</sup>According to the IFRI-SOL Product and Performance Warranty

### Certifications

Management system TÜV-Certified

- ISO 9001:2015: ID 011001317684
- ISO 14001: 2015: ID 011041317684
- ISO 45001:2018: ID 011131815622



Precisely Right.



IF-HM400-144  
 IF-HM405-144  
 IF-HM410-144  
 IF-HM415-144

## Electrical Specification

Module Type	Nominal Power Pmpp	Nominal Voltage Umpv	Nominal Current Impv	Open Circuit Voltage (Uoc)	Short Circuit Current (Isc)	Module Conversion Efficiency
IF-HM400-144	400Wp	40.94V	9.77A	48.85V	10.32A	19.82%
IF-HM405-144	405Wp	41.33V	9.80A	49.25V	10.34A	20.07%
IF-HM410-144	410Wp	41.72V	9.83A	49.65V	10.36A	20.32%
IF-HM415-144	415Wp	42.11V	9.86A	50.05V	10.38A	20.56%

Electrical Data At STC (STANDARD TEST CONDITIONS): 1000W/m<sup>2</sup> Irradiance, 25°C Cell Temperature, AM1.5g Spectrum According to EN 60904-3.  
 Manufacturing Tolerance (Pmax,Voc,Isc) : ±3%

Module Type	Nominal Power Pmpp	Nominal Voltage Umpv	Nominal Current Impv	Open Circuit Voltage (Uoc)	Short Circuit Current (Isc)
IF-HM400-144	300.10Wp	39.30V	7.64A	47.55V	8.09A
IF-HM405-144	303.90Wp	39.50V	7.70A	47.80V	8.20A
IF-HM410-144	307.50Wp	39.75V	7.74A	48.00V	8.24A
IF-HM415-144	311.10Wp	39.99V	7.78A	48.20V	8.28A

Electrical Data At NMOT: 800W/m<sup>2</sup> Irradiance, 20°C Ambient Temperature, 1m/s Wind Speed.  
 Manufacturing Tolerance (Pmax,Voc,Isc) : ±3%

## Temperature Coefficients

Voltage Uoc (β)	-0.30%/°C
Current Isc (α)	+0.06%/°C
Output Power (γ)	-0.36%/°C
NMOT	45±2°C

## Operating conditions

Maximum System Voltage	1500VDC
Maximum Series Fuse	20A
Operating Temperature Range	From -40°C to 85°C
Mechanical Load Test (Front/back)	5400Pa/2400Pa

## Design

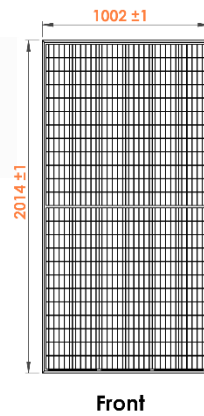
Front Glass	3.2mm High Transmission Low Iron Tempered Glass, AR Coated
Encapsulant	Ethylene Vinyl Acetate (E.V.A)
Cell	5BB PERC Mono-Crystalline /158.75 ×79.375mm/ 144 Pcs
Backside	Composite Film (White, Black, ...)
Frame	35mm Anodized Aluminum (Silver/Black)

## Power Connection

Junction Box	3×IP68 Junction Box With Bypass Diodes
Solar Cable	Length 300 mm , 4mm <sup>2</sup> Prefabricated with Latching Type Connectors
Safety Class	Class II (According to IEC 61140)

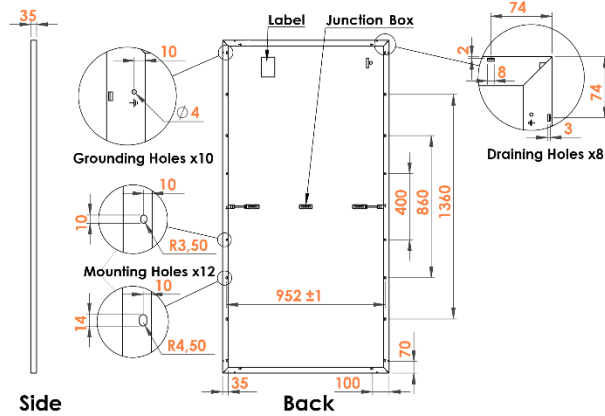
## Packaging specification

Dimensions (H×W ×D)	2039mm ×1150mm×1145mm
Modules Qty per Carton	31
Modules Qty per Container 20"	310
Modules Qty per Container 40" HC	737



Front

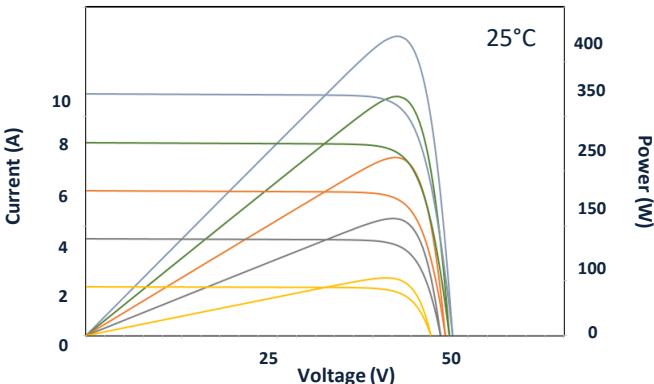
## Drawings



Frame

Tolerance :±1mm

## Current-Voltage/Power-Voltage Curves, IF-HM405-144



— 1000 W/m<sup>2</sup> — 800 W/m<sup>2</sup> — 600 W/m<sup>2</sup> — 400 W/m<sup>2</sup> — 200 W/m<sup>2</sup>

## Mechanical Specification

Dimensions (H×W ×D)	2014mm×1002mm ×35mm (±1mm)
Weight	23.5Kg



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.  
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