



# URS PRODUCTS AND TESTING PRIVATE LIMITED

A-29, Sector-5, Noida-201301  
T +91 (120) 4516264-65 F +91 (120) 4750296  
E info@urs-labs.com W www.urs-labs.com  
CIN NO U21014UP1987PTC008956



## SUMMARY OF TEST REPORT

TEST REPORT NO: SC24SPI01115\_1

DATE: 16/09/2024

(Total Number of Pages in Test Report: 57)

### TEST FORMAT AS PER IS 14286: 2010

1. Name of the Manufacturer: Icon Solar En Power Technologies Private Limited.
2. Product: Crystalline silicon terrestrial photovoltaic (PV) modules (Si wafer based).
3. Model Tested: ISEN600-Bi  
 Series Model:  
**156 Half cut cell family with system voltage 1500V**  
 ISEN595-Bi, ISEN590-Bi, ISEN585-Bi, ISEN580-Bi, ISEN575-Bi, ISEN570-Bi, ISEN565-Bi, ISEN560-Bi,  
**144 Half cut cell family with system voltage 1500V**  
 ISEN555-Bi, ISEN550-Bi, ISEN545-Bi, ISEN540-Bi, ISEN535-Bi, ISEN530-Bi, ISEN525-Bi, ISEN520-Bi,  
**132 Half cut cell family with system voltage 1500V**  
 ISEN505-Bi, ISEN500-Bi, ISEN495-Bi, ISEN490-Bi, ISEN485-Bi, ISEN480-Bi,  
**120 Half cut cell family with system voltage 1500V**  
 ISEN460-Bi, ISEN455-Bi, ISEN450-Bi, ISEN445-Bi, ISEN440-Bi, ISEN435-Bi, ISEN430-Bi, ISEN425-Bi, ISEN420-Bi,  
**108 Half cut cell family with system voltage 1500V**  
 ISEN410-Bi, ISEN405-Bi, ISEN400-Bi, ISEN395-Bi, ISEN390-Bi, ISEN385-Bi, ISEN380-Bi

4. Model differences provided (if applicable): Yes
5. Model differences verified as per MNRE Guidelines for series approval: Yes

### 6. Test Results:

SL. NO.	TEST REQUIREMENT	CLAUSE	VERDICT
1	Marking	4.0	P
2	Visual Inspection	10.1	P
3	Maximum Power Determination	10.2	P
4	Insulation Test	10.3	P
5	Measurement of Temperature Coefficients.	10.4	P
6	Measurement of NOCT	10.5	P
7	Performance at STC and NOCT	10.6	P
8	Performance at low irradiance.	10.7	P
9	Outdoor exposure test	10.8	P



ULR-TC646824100007061F



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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 2 of 59

10	Hot-spot endurance test	10.9	P
11	UV preconditioning	10.10	P
12	Thermal cycling test	10.11	P
13	Humidity freeze test	10.12	P
14	Damp heat test	10.13	P
15	Robustness of termination test	10.14	P
16	Wet leakage current test	10.15	P
17	Mechanical load test	10.16	P
18	Hail test	10.17	P
19	Bypass diode thermal test	10.18	P

### General Information:

1. The conformity certificates of components/parts wherever applicable are verified to ensure complete testing of products under test and details regarding harmonized IEC standards (where IS standards are not available) are also provided in the list of components/parts (description of module construction) wherever applicable.

### CONCLUSION:

1. Sample meets all relevant requirements of IS 14286: 2010
2. Sample fails to meet the following test requirements: N/A

I, hereby undertake that the verdict stated in the test reports for all the test matches with the test results. The sample meets/~~does not meet~~ all relevant requirements stated above of IS 14286: 2010.

Date: 16/09/2024



(Signature of Authorized person with Stamp)



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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 3 of 59

<b>TEST REPORT</b> <b>IS 14286:2010</b> <b>Crystalline Silicon Terrestrial Photovoltaic(PV) Modules</b> <b>-Design Qualification and Type Approval</b>	
Report Reference No.....:	SC24SPI01115_1
Date of issue.....:	16/09/2024
Total number of pages.....:	57
Testing Laboratory.....:	URS PRODUCTS AND TESTING PRIVATE LIMITED
Address.....:	A-29, Sector 5, Noida-201301, India
Applicant's name.....:	<b>Icon Solar En Power Technologies Private Limited.</b>
Address.....:	PH. NO.09, GRAM DIGHARI MANDIR HASAUD, TEH ARANG CHHATTISGARH RAIPUR 492001, CHHATTISHGARH, 492001
Test specification.....:	
Standard.....:	IS 14286: 2010
Test procedure.....:	Compliance report
Non-standard test method.....:	N/A
Test Report Form No. ....:	IS 14286_V1.0
Test Report Form Originator.....:	Bureau of Indian Standards
Master TRF.....:	Dated: 19.02.2018
Test item description.....:	Crystalline Silicon Terrestrial Photovoltaic (PV) Modules (Si Wafer Based)
Trade Mark.....:	
Manufacturer.....:	<b>Icon Solar En Power Technologies Private Limited.</b>
Factory.....:	PH. NO.09, GRAM DIGHARI MANDIR HASAUD, TEH ARANG CHHATTISGARH RAIPUR 492001, CHHATTISHGARH, 492001
Model/Type reference.....:	<b>Model Tested:</b> ISEN600-Bi <b>Series Model:</b> <b>156 Half cut cell family with system voltage 1500V</b> ISEN595-Bi, ISEN590-Bi, ISEN585-Bi, ISEN580-Bi, ISEN575-Bi, ISEN570-Bi, ISEN565-Bi, ISEN560-Bi, <b>144 Half cut cell family with system voltage 1500V</b> ISEN555-Bi, ISEN550-Bi, ISEN545-Bi, ISEN540-Bi, ISEN535-Bi, ISEN530-Bi, ISEN525-Bi, ISEN520-Bi, <b>132 Half cut cell family with system voltage 1500V</b> ISEN505-Bi, ISEN500-Bi, ISEN495-Bi, ISEN490-Bi, ISEN485-Bi, ISEN480-Bi, <b>120 Half cut cell family with system voltage 1500V</b> ISEN460-Bi, ISEN455-Bi, ISEN450-Bi, ISEN445-Bi, ISEN440-Bi, ISEN435-Bi, ISEN430-Bi, ISEN425-Bi, ISEN420-Bi,

TRF No. IS 14286\_V1.0



ULR-TC646824100007061F

Discipline-Electronics Testing Group-Miscellaneous product



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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 4 of 59

	<b>108 Half cut cell family with system voltage 1500V</b> ISEN410-Bi, ISEN405-Bi, ISEN400-Bi, ISEN395-Bi, ISEN390-Bi, ISEN385-Bi, ISEN380-Bi
Ratings.....:	See copy of Marking label and General product information.

<b>Testing procedure and testing location:</b>		
<input checked="" type="checkbox"/> <b>Testing Laboratory:</b>	<b>URS PRODUCTS AND TESTING PRIVATE LIMITED</b>	
Testing location/ address.....:	A-29, Sector 5, Noida-201301, India	
Tested by (name + signature) .....	PUJA KUMARI Asst.Manager	
Approved by (name + signature): 	NILESH BALASAHEB ASWAR (Lab Manager)	
Issued by (name + signature) .... :	Paras Singh (General Manager Technical)	





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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 5 of 59



Summary of testing:	
<b>Tests performed (name of test and test clause):</b>	<b>Testing location:</b> URS PRODUCTS AND TESTING PRIVATE LIMITED A-29, Sector 5, Noida-201301, India
10.1 Visual Inspection	
10.2 Maximum Power Determination	
10.3 Insulation Test	
10.4 Measurement of Temperature Coefficients.	
10.5 Measurement of NOCT	
10.6 Performance at STC and NOCT	
10.7 Performance at low irradiance.	
10.8 Outdoor exposure test	
10.9 Hot-spot endurance test	
10.10 UV preconditioning	
10.11 Thermal cycling test	
10.12 Humidity freeze test	
10.13 Damp heat test	
10.14 Robustness of termination test	
10.15 Wet leakage current test	
10.16 Mechanical load test	
10.17 Hail test	
10.18 Bypass diode thermal test	







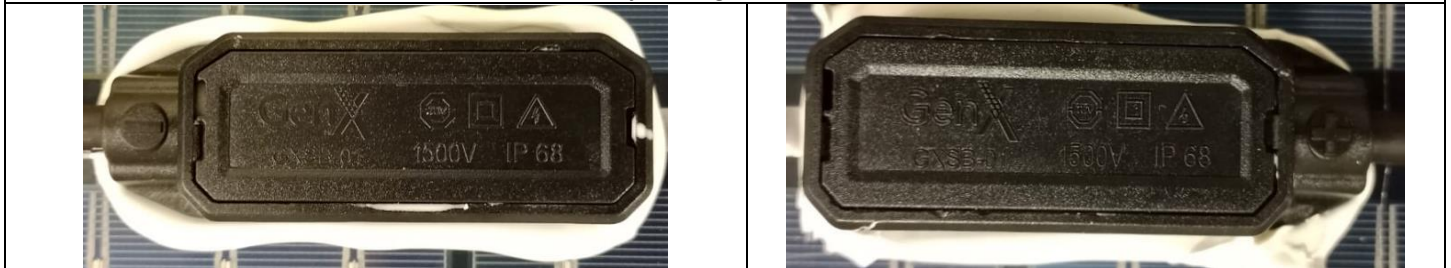
**Copy of Marking Plate**

(Model Tested: ISEN600-Bi)

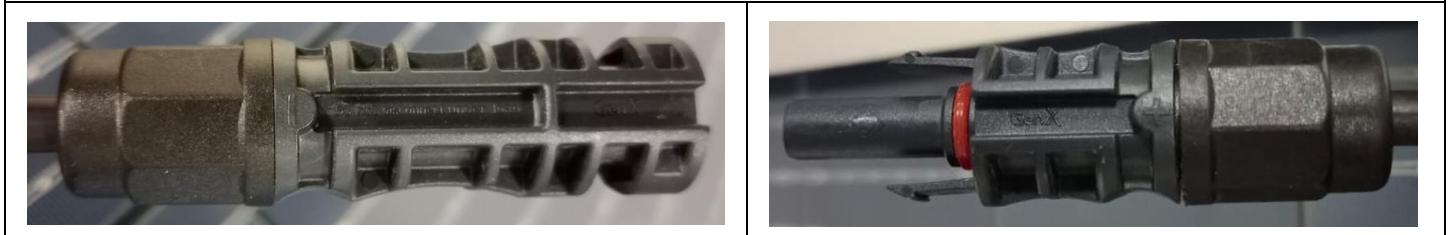
 <b>EN-ICON</b> Icon Solar-En Power Technologies Private Limited Factory Address- PH No. 09, Gram-Dighari, Mandir Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India Tel: +91 771-4065755	Model No : ISEN600-Bi Pmax (W) : 600 Wp, ± 2% Voc (V) : 53.50 V Vm (V) : 45.20 V Isc (A) : 14.08 A Imax (A) : 13.29 A	Dimension (L x W x H) : 2464 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 25 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 <b>WARNING</b> ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

	 ICON600B1006081014	ICON SOLAR – EN POWER TECHNOLOGIES PVT. LTD. YEAR OF MAKE : 2024 MODEL : ISEN600 – Bi NOMINAL WATTAGE : 600Wp ± 2% MADE IN INDIA
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**Polarity marking on Junction Box**



**Polarity marking on Connectors**



The marking plate above represents all models covered by this report. See "General product information" for electrical ratings for all models.



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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 7 of 59

## (Series Model: ISEN595-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN595-Bi  
Pmax (W) : 595 Wp  $\pm$ 2%  
Voc (V) : 53.40 V  
Vm (V) : 45.00 V  
Isc (A) : 14.01 A  
Imax (A) : 13.23 A

Dimension (L x W x H) : 2464 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN595-Bi  
NOMINAL WATTAGE: 595 Wp  $\pm$  2% MADE IN INDIA

ICON595B1006081001



## (Series Model: ISEN590-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN590-Bi  
Pmax (W) : 590 Wp  $\pm$ 2%  
Voc (V) : 53.30 V  
Vm (V) : 44.80 V  
Isc (A) : 13.94 A  
Imax (A) : 13.18 A

Dimension (L x W x H) : 2464 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN590-Bi  
NOMINAL WATTAGE: 590 Wp  $\pm$  2% MADE IN INDIA

ICON590B1006081001





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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 8 of 59

## (Series Model: ISEN585-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN585-Bi  
Pmax (W) : 585 Wp ±2%  
Voc (V) : 53.20 V  
Vm (V) : 44.60 V  
Isc (A) : 13.87 A  
Imax (A) : 13.12 A

Dimension (L x W x H) : 2464 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN585-Bi  
NOMINAL WATTAGE: 585 Wp ± 2% MADE IN INDIA

ICON585B1006081001



## (Series Model: ISEN580-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN580-Bi  
Pmax (W) : 580 Wp ±2%  
Voc (V) : 53.10 V  
Vm (V) : 44.40 V  
Isc (A) : 13.79 A  
Imax (A) : 13.07 A

Dimension (L x W x H) : 2464 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN580-Bi  
NOMINAL WATTAGE: 580 Wp ± 2% MADE IN INDIA

ICON580B1006081001







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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 9 of 59

## (Series Model: ISEN575-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN575-Bi  
Pmax (W) : 575 Wp ±2%  
Voc (V) : 53.00 V  
Vm (V) : 44.20 V  
Isc (A) : 13.69 A  
Imax (A) : 13.02 A

Dimension (L x W x H) : 2464 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN575-Bi  
NOMINAL WATTAGE: 575 Wp ± 2% MADE IN INDIA  
  
ICON575B1006081001

## (Series Model: ISEN570-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN570-Bi  
Pmax (W) : 570 Wp ±2%  
Voc (V) : 52.90 V  
Vm (V) : 44.00 V  
Isc (A) : 13.60 A  
Imax (A) : 12.96 A

Dimension (L x W x H) : 2464 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN570-Bi  
NOMINAL WATTAGE: 570 Wp ± 2% MADE IN INDIA  
  
ICON570B1006081001





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CIN NO U21014UP1987PTC008956




Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024



Page 10 of 59


## (Series Model: ISEN565-Bi)

 <b>Icon Solar-En Power Technologies Private Limited</b> Factory Address- PH No. 09, Gram-Dighari, Mandir Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India Tel: +91 771-4065755	Model No : ISEN565-Bi Pmax (W) : 565 Wp ±2% Voc (V) : 52.80 V Vm (V) : 43.80 V Isc (A) : 13.55 A Imax (A) : 12.91 A	Dimension (L x W x H) : 2464 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 25 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 <b>WARNING</b> ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
 YEAR OF MAKE : 2024 MODEL : ISEN565-Bi  
 NOMINAL WATTAGE: 565 Wp ± 2% MADE IN INDIA  
  
 ICON565B1006081001  


## (Series Model: ISEN560-Bi)

 <b>Icon Solar-En Power Technologies Private Limited</b> Factory Address- PH No. 09, Gram-Dighari, Mandir Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India Tel: +91 771-4065755	Model No : ISEN560-Bi Pmax (W) : 560 Wp ±2% Voc (V) : 52.70 V Vm (V) : 43.60 V Isc (A) : 13.49 A Imax (A) : 12.85 A	Dimension (L x W x H) : 2464 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 25 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 <b>WARNING</b> ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
 YEAR OF MAKE : 2024 MODEL : ISEN560-Bi  
 NOMINAL WATTAGE: 560 Wp ± 2% MADE IN INDIA  
  
 ICON560B1006081001  






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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 11 of 59

## (Series Model: ISEN555-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN555-Bi  
Pmax (W) : 555 Wp ±2%  
Voc (V) : 49.75 V  
Vm (V) : 42.12 V  
Isc (A) : 14.02 A  
Imax (A) : 13.18 A

Dimension (L x W x H) : 2278 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN555-Bi  
NOMINAL WATTAGE: 555 Wp ± 2% MADE IN INDIA

ICON555B1006081001



## (Series Model: ISEN550-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN550-Bi  
Pmax (W) : 550 Wp ±2%  
Voc (V) : 49.60 V  
Vm (V) : 41.97 V  
Isc (A) : 13.98 A  
Imax (A) : 13.11 A

Dimension (L x W x H) : 2278 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN550-Bi  
NOMINAL WATTAGE: 550 Wp ± 2% MADE IN INDIA

ICON550B1006081001





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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 12 of 59

## (Series Model: ISEN545-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN545-Bi  
Pmax (W) : 545 Wp ±2%  
Voc (V) : 49.45 V  
Vm (V) : 41.81 V  
Isc (A) : 13.93 A  
Imax (A) : 13.04 A

Dimension (L x W x H) : 2278 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN545-Bi  
NOMINAL WATTAGE: 545 Wp ± 2% MADE IN INDIA

ICON545B1006081001



## (Series Model: ISEN540-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh India  
Tel: +91 771-4065755

Model No : ISEN540-Bi  
Pmax (W) : 540 Wp ±2%  
Voc (V) : 49.30 V  
Vm (V) : 41.65 V  
Isc (A) : 13.86 A  
Imax (A) : 12.97 A

Dimension (L x W x H) : 2278 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN540-Bi  
NOMINAL WATTAGE: 540 Wp ± 2% MADE IN INDIA

ICON540B1006081001







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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 13 of 59

## (Series Model: ISEN535-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN535-Bi  
Pmax (W) : 535 Wp  $\pm$ 2%  
Voc (V) : 49.15 V  
Vm (V) : 41.47 V  
Isc (A) : 13.79 A  
Imax (A) : 12.91 A

Dimension (L x W x H) : 2278 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN535-Bi  
NOMINAL WATTAGE: 535 Wp  $\pm$  2% MADE IN INDIA

ICON535B1006081001



## (Series Model: ISEN530-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN530-Bi  
Pmax (W) : 530 Wp  $\pm$ 2%  
Voc (V) : 49.00 V  
Vm (V) : 41.32 V  
Isc (A) : 13.72 A  
Imax (A) : 12.83 A

Dimension (L x W x H) : 2278 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN530-Bi  
NOMINAL WATTAGE: 530 Wp  $\pm$  2% MADE IN INDIA

ICON530B1006081001







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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 14 of 59

## (Series Model: ISEN525-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN525-Bi  
Pmax (W) : 525 Wp ±2%  
Voc (V) : 48.85 V  
Vm (V) : 41.16 V  
Isc (A) : 13.65 A  
Imax (A) : 12.76 A

Dimension (L x W x H) : 2278 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN525-Bi  
NOMINAL WATTAGE: 525 Wp ± 2% MADE IN INDIA

ICON525B1006081001



## (Series Model: ISEN520-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN520-Bi  
Pmax (W) : 520 Wp ±2%  
Voc (V) : 48.70 V  
Vm (V) : 41.00 V  
Isc (A) : 13.58 A  
Imax (A) : 12.69 A

Dimension (L x W x H) : 2278 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN520-Bi  
NOMINAL WATTAGE: 520 Wp ± 2% MADE IN INDIA

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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 15 of 59

## (Series Model: ISEN505-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN505-Bi  
Pmax (W) : 505 Wp ±2%  
Voc (V) : 45.54 V  
Vm (V) : 38.53 V  
Isc (A) : 13.98 A  
Imax (A) : 13.11 A

Dimension (L x W x H) : 2094 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN505-Bi  
NOMINAL WATTAGE: 505 Wp ± 2% MADE IN INDIA  
  
ICON505B1006081001

## (Series Model: ISEN500-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN500-Bi  
Pmax (W) : 500 Wp ±2%  
Voc (V) : 45.39 V  
Vm (V) : 38.38 V  
Isc (A) : 13.93 A  
Imax (A) : 13.04 A

Dimension (L x W x H) : 2094 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN500-Bi  
NOMINAL WATTAGE: 500 Wp ± 2% MADE IN INDIA  
  
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Dated : 16/09/2024

Page 16 of 59

## (Series Model: ISEN495-Bi )



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Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN495-Bi  
Pmax (W) : 495 Wp ±2%  
Voc (V) : 45.24 V  
Vm (V) : 38.22 V  
Isc (A) : 13.86 A  
Imax (A) : 12.97 A

Dimension (L x W x H) : 2094 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN495-Bi  
NOMINAL WATTAGE: 495 Wp ± 2% MADE IN INDIA

ICON495B1006081001



## (Series Model: ISEN490-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN490-Bi  
Pmax (W) : 490 Wp ±2%  
Voc (V) : 45.09 V  
Vm (V) : 38.02 V  
Isc (A) : 13.79 A  
Imax (A) : 12.91 A

Dimension (L x W x H) : 2094 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN490-Bi  
NOMINAL WATTAGE: 490 Wp ± 2% MADE IN INDIA

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Dated : 16/09/2024

Page 17 of 59

## (Series Model: ISEN485-Bi )



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Factory Address- PH No. 09, Gram-Dighari, Mandir  
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Tel: +91 771-4065755

Model No : ISEN485-Bi  
Pmax (W) : 485 Wp ±2%  
Voc (V) : 44.94 V  
Vm (V) : 37.90 V  
Isc (A) : 13.72 A  
Imax (A) : 12.81 A

Dimension (L x W x H) : 2094 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN485-Bi  
NOMINAL WATTAGE: 485 Wp ± 2% MADE IN INDIA

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## (Series Model: ISEN480-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN480-Bi  
Pmax (W) : 480 Wp ±2%  
Voc (V) : 44.75 V  
Vm (V) : 37.78 V  
Isc (A) : 13.65 A  
Imax (A) : 12.71 A

Dimension (L x W x H) : 2094 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN480-Bi  
NOMINAL WATTAGE: 480 Wp ± 2% MADE IN INDIA

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Dated : 16/09/2024

Page 18 of 59

## (Series Model: ISEN460-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN460-Bi  
Pmax (W) : 460 Wp ±2%  
Voc (V) : 41.48 V  
Vm (V) : 34.18 V  
Isc (A) : 14.01 A  
Imax (A) : 13.47 A

Dimension (L x W x H) : 1908 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN460-Bi  
NOMINAL WATTAGE: 460 Wp ± 2% MADE IN INDIA  
  
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## (Series Model: ISEN455-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN455-Bi  
Pmax (W) : 455 Wp ±2%  
Voc (V) : 41.33 V  
Vm (V) : 34.06 V  
Isc (A) : 13.93 A  
Imax (A) : 13.36 A

Dimension (L x W x H) : 1908 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN455-Bi  
NOMINAL WATTAGE: 455 Wp ± 2% MADE IN INDIA  
  
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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 19 of 59

## (Series Model: ISEN450-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN450-Bi  
Pmax (W) : 450 Wp ±2%  
Voc (V) : 41.18 V  
Vm (V) : 33.95 V  
Isc (A) : 13.85 A  
Imax (A) : 13.26 A

Dimension (L x W x H) : 1908 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN450-Bi  
NOMINAL WATTAGE: 450 Wp ± 2% MADE IN INDIA  
  
ICON450B1006081001

## (Series Model: ISEN445-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN445-Bi  
Pmax (W) : 445 Wp ±2%  
Voc (V) : 41.10 V  
Vm (V) : 33.84 V  
Isc (A) : 13.79 A  
Imax (A) : 13.16 A

Dimension (L x W x H) : 1908 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN445-Bi  
NOMINAL WATTAGE: 445 Wp ± 2% MADE IN INDIA  
  
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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 20 of 59

## (Series Model: ISEN440-Bi )



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Factory Address- PH No. 09, Gram-Dighari, Mandir  
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Tel: +91 771-4065755

Model No : ISEN440-Bi  
Pmax (W) : 440 Wp ±2%  
Voc (V) : 41.02 V  
Vm (V) : 33.72 V  
Isc (A) : 13.73 A  
Imax (A) : 13.05 A

Dimension (L x W x H) : 1908 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN440-Bi  
NOMINAL WATTAGE: 440 Wp ± 2% MADE IN INDIA

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## (Series Model: ISEN435-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN435-Bi  
Pmax (W) : 435 Wp ±2%  
Voc (V) : 40.91 V  
Vm (V) : 33.61 V  
Isc (A) : 13.62 A  
Imax (A) : 12.95 A

Dimension (L x W x H) : 1908 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN435-Bi  
NOMINAL WATTAGE: 435 Wp ± 2% MADE IN INDIA

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Dated : 16/09/2024

Page 21 of 59


## (Series Model: ISEN430-Bi )

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	ELECTRICAL PARAMETER MEASURED AT STC		



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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
 YEAR OF MAKE : 2024 MODEL : ISEN430-Bi  
 NOMINAL WATTAGE: 430 Wp ± 2% MADE IN INDIA

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## (Series Model: ISEN425-Bi )

 <b>Icon Solar-En Power Technologies Private Limited</b> Factory Address- PH No. 09, Gram-Dighari, Mandir Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India Tel: +91 771-4065755	Model No : ISEN425-Bi Pmax (W) : 425 Wp ±2% Voc (V) : 40.75 V Vm (V) : 33.46 V Isc (A) : 13.46 A Imax (A) : 12.71 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 25 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 <b>WARNING</b> ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
 YEAR OF MAKE : 2024 MODEL : ISEN425-Bi  
 NOMINAL WATTAGE: 425 Wp ± 2% MADE IN INDIA

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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 22 of 59

## (Series Model: ISEN420-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN420-Bi  
Pmax (W) : 420 Wp ±2%  
Voc (V) : 40.71 V  
Vm (V) : 33.42 V  
Isc (A) : 13.42 A  
Imax (A) : 12.57 A

Dimension (L x W x H) : 1908 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN420-Bi  
NOMINAL WATTAGE: 420 Wp ± 2% MADE IN INDIA

ICON420B1006081001



## (Series Model: ISEN410-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN410-Bi  
Pmax (W) : 410 Wp ±2%  
Voc (V) : 37.21 V  
Vm (V) : 31.52 V  
Isc (A) : 13.82 A  
Imax (A) : 13.01 A

Dimension (L x W x H) : 1722 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN410-Bi  
NOMINAL WATTAGE: 410 Wp ± 2% MADE IN INDIA

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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 23 of 59

## (Series Model: ISEN405-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN405-Bi  
Pmax (W) : 405 Wp ±2%  
Voc (V) : 37.06 V  
Vm (V) : 31.36 V  
Isc (A) : 13.75 A  
Imax (A) : 12.92 A

Dimension (L x W x H) : 1722 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN405-Bi  
NOMINAL WATTAGE: 405 Wp ± 2% MADE IN INDIA  
  
ICON405B1006081001

## (Series Model: ISEN400-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN400-Bi  
Pmax (W) : 400 Wp ±2%  
Voc (V) : 36.91 V  
Vm (V) : 31.20 V  
Isc (A) : 13.68 A  
Imax (A) : 12.83 A

Dimension (L x W x H) : 1722 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN400-Bi  
NOMINAL WATTAGE: 400 Wp ± 2% MADE IN INDIA  
  
ICON400B1006081001







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CIN NO U21014UP1987PTC008956



TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 24 of 59

## (Series Model: ISEN395-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN395-Bi  
Pmax (W) : 395 Wp ±2%  
Voc (V) : 36.76 V  
Vm (V) : 31.04 V  
Isc (A) : 13.61 A  
Imax (A) : 12.73 A

Dimension (L x W x H) : 1722 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN395-Bi  
NOMINAL WATTAGE: 395 Wp ± 2% MADE IN INDIA

ICON395B1006081001



## (Series Model: ISEN390-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN390-Bi  
Pmax (W) : 390 Wp ±2%  
Voc (V) : 36.61 V  
Vm (V) : 30.88 V  
Isc (A) : 13.54 A  
Imax (A) : 12.63 A

Dimension (L x W x H) : 1722 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN390-Bi  
NOMINAL WATTAGE: 390 Wp ± 2% MADE IN INDIA

ICON390B1006081001





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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 25 of 59

## (Series Model: ISEN390-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN390-Bi  
Pmax (W) : 390 Wp ±2%  
Voc (V) : 36.61 V  
Vm (V) : 30.88 V  
Isc (A) : 13.54 A  
Imax (A) : 12.63 A

Dimension (L x W x H) : 1722 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN390-Bi  
NOMINAL WATTAGE: 390 Wp ± 2% MADE IN INDIA

ICON390B1006081001



## (Series Model: ISEN385-Bi)



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN385-Bi  
Pmax (W) : 385 Wp ±2%  
Voc (V) : 36.46 V  
Vm (V) : 30.72 V  
Isc (A) : 13.47 A  
Imax (A) : 12.54 A

Dimension (L x W x H) : 1722 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN385-Bi  
NOMINAL WATTAGE: 385 Wp ± 2% MADE IN INDIA

ICON385B1006081001





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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 26 of 59

## (Series Model: ISEN380-Bi )



Icon Solar-En Power Technologies Private Limited  
Factory Address- PH No. 09, Gram-Dighari, Mandir  
Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India  
Tel: +91 771-4065755

Model No : ISEN380-Bi  
Pmax (W) : 380 Wp ±2%  
Voc (V) : 36.31 V  
Vm (V) : 30.56 V  
Isc (A) : 13.40 A  
Imax (A) : 12.44 A

Dimension (L x W x H) : 1722 x 1134 x 35mm  
System Voltage : 1500 V  
Series Fuse Rating : 25 A  
Application Class : CLASS A  
Safety Class : CLASS II  
Fire safety Class : CLASS C



**WARNING**  
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

[www.iconsolar-en.com](http://www.iconsolar-en.com)

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.  
YEAR OF MAKE : 2024 MODEL : ISEN380-Bi  
NOMINAL WATTAGE: 380 Wp ± 2% MADE IN INDIA  
  
ICON380B1006081001





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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 27 of 59

GENERAL INFORMATION	
<b>Test item particulars:</b>	
Accessories and detachable parts included in the evaluation.....:	N/A
Options included.....:	N/A
<u>Abbreviations used in the report:</u>	
HF–Humidity Freeze	TC–Temperature Cycling
DH–Damp Heat	Vmp–Maximum power voltage
Imp–Maximum power current	Voc–Open circuit voltage
Isc-Short circuit current	FF–Fill Factor
Pmp –Maximum power	$\alpha$ –Current temperature coefficient
NOCT–Nominal Operating Cell Temperature	$\beta$ –Voltage temperature coefficient
STC –Standard Test Conditions	$\delta$ –power temperature coefficient
<u>Possible test case verdicts:</u>	
-test case does not apply to the test object.....:	N/A (Not Applicable)
-test object does meet the requirement.....:	Pass (P)
-test object does not meet the requirement.....:	Fail (F)

General remarks:  
 The test results presented in this report relate only to the object tested.  
 This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.  
 "(See Enclosure #)" refers to additional information appended to the report.  
 "(See appended table)" refers to a table appended to the report.  
 Throughout this report a point is used as the decimal separator.





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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 28 of 59

### General Product Information:

PV module type reference.....: ISEN600-Bi

#### Product Electrical Ratings at STC

Nominal maximum power (Pmax).....: 600W

Nominal open circuit voltage at (Voc).....: 53.50V

Nominal short circuit current at (Isc).....: 14.08A

Nominal maximum power voltage (Vpm).....: 45.20V

Nominal maximum power current (Ipm).....: 13.29A

#### Product Safety Ratings

Maximum system voltage.....: 1500V

Maximum over-current protection rating.....: 25A

Safety application class.....: Class A

Safety class in accordance with IS 61140.....: Class II

Fire safety class.....: Class C

Recommended maximum series/parallel module configurations.....: Maximum number of 26 modules in series.







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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 29 of 59

### Description of module construction:

<b>A1.1</b>	<b>MODULE TYPE/S</b>	
	Model Tested: ISEN600-Bi	
<b>A1.2</b>	<b>MODULE DESIGN –DIMENSIONS</b>	
	Module dimensions (L x W x H) [mm].....:	2464*1134*35 for 156 half cut cell family 2278*1134*35 for 144 half cut cell family 2094*1134*35 for 132 half cut cell family 1908*1134*35 for 120 half cut cell family 1722*1134*35 for 108 half cut cell family
<b>A1.3</b>	<b>SOLAR CELL</b>	
	Cell type reference.....:	<b>Main:</b> 182.2 MONO PERC SOLAR CELL PIRANHA P-TYPE BI-FACIAL, Manufactured by: Premier Energies <b>Alternate:</b> WS182MP10, Manufactured by: Websol Energy System Limited
	Cell dimensions L x W x T (± %) [mm].....:	<b>Main:</b> 91.1mm *182.2mm (±0.25 mm) <b>Alternate:</b> 91.1mm *182.2mm (±0.5 mm)
	Cell thickness [µm].....:	<b>Main:</b> 145 ± 25 µm <b>Alternate:</b> 150 ± 15 µm
	Cell area [cm <sup>2</sup> ].....:	<b>Main:</b> 165.984 <b>Alternate:</b> 165.984
<b>A1.4</b>	<b>IDENTIFICATION OF MATERIALS</b>	
	Front cover.....:	Solar Glass Tempered AR Coated; THICKNESS: 3.2mm ± 0.2mm; Manufactured by: BOROSIL RENEWABLES LTD.
	Rear cover.....:	PRESERV 1- 300 TF; THICKNESS: 360 µm, Rated voltage: 1500V, FSI :29.5, RTI 140°C and 150°C Manufactured by: Renewsys India Private LTD. Partial discharge reference project no. 4789424469 tested by UL India Pvt Ltd
	Encapsulation material.....:	T601FC/ B601FC, Thickness: 0.60mm; Manufactured by: Sunlink Photovoltaic Pvt. Ltd.
	Frame parts.....:	Material/Coating: Alloy 6063, T6, Thickness: 35mm; Manufactured by Sudarshan Alluminium India Limited
	Mounting parts.....:	As per installation manual
	Adhesive for frame.....:	Fasto SM30, White colour; Manufactured by FASTO ADVANCE MATERIALS INDIA PVT. LTD.
	Cell connector.....:	Solder tin plated copper ribbons, Sn60%/Pb40% Dimensions [mm]: 0.32 mm; Manufactured by: GEBA CABLES & WIRES INDIA PRIVATE LIMITED
	String connector.....:	Busbar, Sn60%/Pb40%, Dimensions [mm]: 4x 0.40mm & 6x 0.40mm, Manufactured by: GEBA CABLES & WIRES INDIA PRIVATE LIMITED





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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 30 of 59

Fluxing agent.....:	952-S, Low-Solids, No-Clean Liquid Flux, Manufactured by Kester
Junction box.....:	GXSB-01, Rated voltage: 1.5KVDC, Rated Current: 25A, IP68, Ambient Temperature: -40°C to +85°C, Manufactured by GENX PV INDIA PRIVATE LIMITED. Certified by TUV SUD; certificate no.: B1157770002
Cable	BIRLA UNISTAR solar cable 1CX4.0mm2, Rated voltage: 1.8 kV DC (Max.), Temperature: - 40°C to +90°C, Max. temperature at conductor:120°C, Manufactured by VINDHYA TELELINKS LIMITED Certificate no.: R 60148057, Tested by TUV Rheinland.
Connector.....:	GXC-01, Rated voltage: 1500VDC, Rated current: 40A, IP68, Ambient Temperature: -40°C to 85°C, Manufactured by GENX PV INDIA PRIVATE LIMITED. Certificate no.: B 115777 0001 Rev. 00, Tested by TUV SUD.
Bypass diode.....:	MK5045, Tj [°C]: -55 to +200°C, V <sub>RMS</sub> : 31.5V; I <sub>FSM</sub> : 400A; R <sub>ΘJC</sub> : 2°C/W, Manufactured by GENX PV INDIA PRIVATE LIMITED.
Potting material.....:	Fasto SP70, White colour; Manufactured by FASTO ADVANCE MATERIALS INDIA PVT. LTD.
Adhesive for junction box.....:	Fasto SM30, White colour; Manufactured by FASTO ADVANCE MATERIALS INDIA PVT. LTD.
Soldering Material.....:	N/A
Additional material (e. g. insulation tape)....:	N/A

A1.5		MODULE DESIGN - MINIMUM DISTANCES
Between cells.....:	Top to bottom: 1.4mm Along the side: 1.8mm	
Between cell and edge of laminate.....:	13.5mm	
Between any current carrying part and edge of laminate....:	14mm	

A1.6		MODULE DESIGN - ELECTRICAL CONFIGURATION
Total number of cells.....:	156; 144; 132; 120; 108	
Serial-parallel connection of cells.....:	Series parallel	
Cells per bypass diode.....:	52 for 156 half cut cell family 48 for 144 half cut cell family 44 for 132 half cut cell family 40 for 120 half cut cell family 36 for 108 half cut cell family	
No. of bypass diodes.....:	3	

**Note:** Bill of material are same for all series family models.





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TC-6468

Test Report No: SC24SPI01115\_1  
 Dated : 16/09/2024

Page 31 of 59

Similarities & difference between representative model and series/family models:									
Sr. No	Series/Family Models	Electrical Specifications						Model difference	Model similarities
		Maximum System Voltage, (Vdc)	Open Circuit Voltage @STC/Voc (Vdc)	Rated Voltage @ STC/ Vmp (V dc)	Short Circuit Current @ STC/Isc (A)	Rated Current @ STC/Imp (A)	Rated Maximum Power at STC, (Watts)		
1.	ISEN600-Bi (Representative Model)	1500	53.50	45.20	14.08	13.29	600	<ul style="list-style-type: none"> <li>• Pmp</li> <li>• Voc</li> <li>• Isc</li> <li>• Vmp</li> <li>• Imp</li> </ul> <ul style="list-style-type: none"> <li>• Maximum System Voltage</li> <li>• Cell technology</li> <li>• Encapsulation</li> <li>• Superstrate</li> <li>• Module size</li> <li>• Backsheet/ substrate</li> <li>• Frame and/or mounting structure</li> <li>• Junction box/electrical termination</li> <li>• Cell interconnect materials or technique</li> <li>• Electrical circuit of an identical package</li> <li>• Power output (by 10%) in the identical package including size and using the identical cell process.</li> <li>• Bypass diode</li> </ul>	
Series Models:									
2.	ISEN595-Bi	1500	53.40	45.00	14.01	13.23	595		
3.	ISEN590-Bi	1500	53.30	44.80	13.94	13.18	590		
4.	ISEN585-Bi	1500	53.20	44.60	13.87	13.12	585		
5.	ISEN580-Bi	1500	53.10	44.40	13.79	13.07	580		
6.	ISEN575-Bi	1500	53.00	44.20	13.69	13.02	575		
7.	ISEN570-Bi	1500	52.90	44.00	13.60	12.96	570		
8.	ISEN565-Bi	1500	52.80	43.80	13.55	12.91	565		
9.	ISEN560-Bi	1500	52.70	43.60	13.49	12.85	560		
10.	ISEN555-Bi	1500	49.75	42.12	14.02	13.18	555		
11.	ISEN550-Bi	1500	49.60	41.97	13.98	13.11	550		
12.	ISEN545-Bi	1500	49.45	41.81	13.93	13.04	545		
13.	ISEN540-Bi	1500	49.30	41.65	13.86	12.97	540		
14.	ISEN535-Bi	1500	49.15	41.47	13.79	12.91	535		
15.	ISEN530-Bi	1500	49.00	41.32	13.72	12.83	530		
16.	ISEN525-Bi	1500	48.85	41.16	13.65	12.76	525		
17.	ISEN520-Bi	1500	48.70	41.00	13.58	12.69	520		
18.	ISEN505-Bi	1500	45.54	38.53	13.98	13.11	505		
19.	ISEN500-Bi	1500	45.39	38.38	13.93	13.04	500		
20.	ISEN495-Bi	1500	45.24	38.22	13.86	12.97	495		
21.	ISEN490-Bi	1500	45.09	38.02	13.79	12.91	490		
22.	ISEN485-Bi	1500	44.94	37.90	13.72	12.81	485		
23.	ISEN480-Bi	1500	44.75	37.78	13.65	12.71	480		
24.	ISEN460-Bi	1500	41.48	34.18	14.01	13.47	460		
25.	ISEN455-Bi	1500	41.33	34.06	13.93	13.36	455		
26.	ISEN450-Bi	1500	41.18	33.95	13.85	13.26	450		
27.	ISEN445-Bi	1500	41.10	33.84	13.79	13.16	445		
28.	ISEN440-Bi	1500	41.02	33.72	13.73	13.05	440		
29.	ISEN435-Bi	1500	40.91	33.61	13.62	12.95	435		
30.	ISEN430-Bi	1500	40.79	33.51	13.51	12.84	430		
31.	ISEN425-Bi	1500	40.75	33.46	13.46	12.71	425		
32.	ISEN420-Bi	1500	40.71	33.42	13.42	12.57	420		
33.	ISEN410-Bi	1500	37.21	31.52	13.82	13.01	410		
34.	ISEN405-Bi	1500	37.06	31.36	13.75	12.92	405		





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Test Report No: SC24SPI01115\_1 Page 32 of 59  
Dated : 16/09/2024

35.	ISEN400-Bi	1500	36.91	31.20	13.68	12.83	400		
36.	ISEN395-Bi	1500	36.76	31.04	13.61	12.73	395		
37.	ISEN390-Bi	1500	36.61	30.88	13.54	12.63	390		
38.	ISEN385-Bi	1500	36.46	30.72	13.47	12.54	385		
39.	ISEN380-Bi	1500	36.31	30.56	13.40	12.44	380		







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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 33 of 59

Testing Procedure
<input checked="" type="checkbox"/> New module type
<input checked="" type="checkbox"/> Modifications (if yes, please choose the applicable modification according to the Retesting Guideline)
<input checked="" type="checkbox"/> Change in cell technology
<input type="checkbox"/> Modification to encapsulation system
<input type="checkbox"/> Modification to superstrate
<input type="checkbox"/> Increase in module size
<input type="checkbox"/> Modification to back sheet/ substrate
<input type="checkbox"/> Modification to frame and/ or mounting structure
<input type="checkbox"/> Modification to junction box/ electrical termination
<input type="checkbox"/> Change in cell interconnect materials or technique
<input type="checkbox"/> Change in electrical circuit of an identical package
<input type="checkbox"/> Higher or lower power output (by 10%) in the identical package including size and using the identical cell process
<input type="checkbox"/> Qualification of a frameless module after the design has received certification as a framed module
<input type="checkbox"/> Change in bypass diode or number of diodes

Module group assignment:		
Sample #	Sample Group ID	Sample No. & Serial number
Full Testing		
ISEN600-Bi	A	1 & ICON600B1006081001
	B	2 & ICON600B1006081002
	C1	3 & ICON600B1006081003
	C2	4 & ICON600B1006081004
	D1	5 & ICON600B1006081006
	D2	6 & ICON600B1006081007
	E1	7 & ICON600B1006081008
	E2	8 & ICON600B1006081009
Modification due to change in cell technology		
ISEN600-Bi	A	9 & ICON600B1006081011
	B	10 & ICON600B1006081013
	D1	11 & ICON600B1006081014
	D2	12 & ICON600B1006081015
	E1	13 & ICON600B1006081016
	E2	14 & ICON600B1006081017





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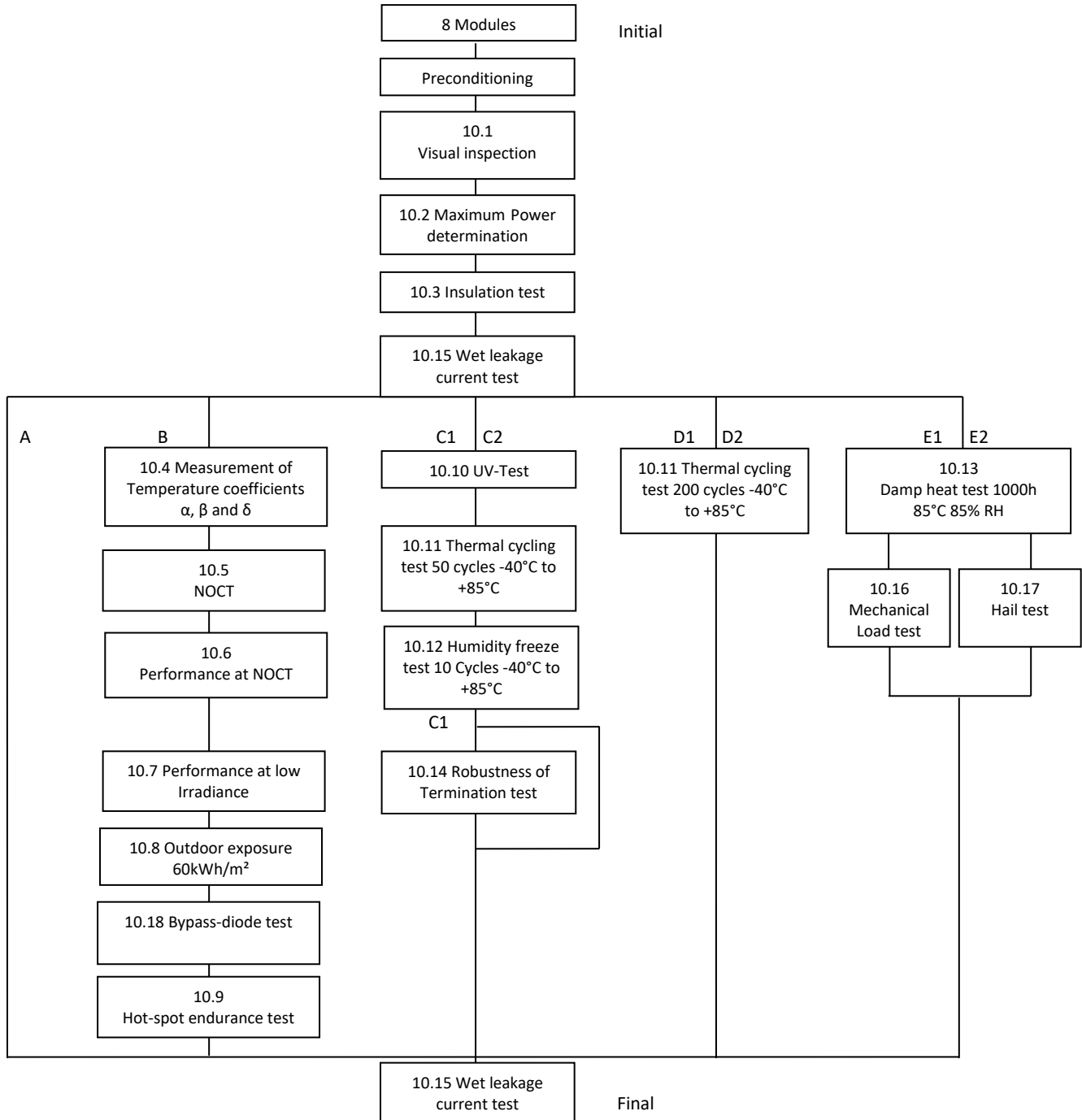
TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 34 of 59

10	TEST PROCEDURES (if it is not a full test, strikethrough non-performed test) Note: Deviations from test sequence are possible but must be documented.
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### TEST PROCEDURES






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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 35 of 59

Clause	Requirement + Test	Result-Remark	Verdict
4	MARKING		P
	Name, monogram or symbol of manufacturer.....:	Icon Solar En Power Technologies Private Limited. 	P
	Type or model number.....:	ISEN600-Bi	P
	Serial number.....:	Marked	P
	Polarity of terminals or leads.....:	Marked	P
	Maximum system voltage.....:	1500V	P
	The date and place of manufacture.....:	Marked (Traceable through serial number)	P
	Initial examination	All Modules	-
10	Preconditioning.....:	5.0 kWh/m <sup>2</sup>	P
10.1	Visual inspection.....:	See table 10.1 Int	P
10.2	Maximum power determination.....:	See table 10.2 Int	P
10.3	Insulation test.....:	See table 10.3 Int	P
10.15	Wet leakage current test	See table 10.15 Int	P
Group A	Control Module	Sample Group ID A	-
Group B	1 Module	Sample Group ID B	-
10.4	Measurement of temperature coefficients	See table 10.4 B	P
10.5	Measurement of Nominal Operating Cell Temperature [NOCT, °C].....:	See table 10.5 B	P
10.6	Performance at STC and NOCT.....:	See table 10.6 B	P
10.7	Performance at low irradiance.....:	See table 10.7 B	P
10.8	Outdoor exposure test	See table 10.8 B	P
10.18	Bypass diode thermal test	See table 10.18 B	P
	Maximum allowed junction temperature.....:	200°C	P
	Measured junction temperature.....:	See table 10.18 B	P
10.9	Hot spot endurance test.....:	See table 10.9 B	P
Group C	2Modules	Sample Group ID C1, C2	P
10.10	UV test.....:	15 kWh/m <sup>2</sup>	P
	Final measurements	See table 10.10 C	P
10.11	Thermal cycling test (50cycles).....:	50	P
	Final measurements	See appended table 10.11 C	P
10.12	Humidity freeze (10cycles).....:	10	P
	Final measurements	See table 10.12 C	P
Group C1	1 Module	Sample Group ID C1	P
10.14	Robustness of terminations test.....:	Type A	P
	Final measurements	See table 10.14 C1	P





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CIN NO U21014UP1987PTC008956



Test Report No: SC24SPI01115\_1 Page 36 of 59  
Dated : 16/09/2024

Clause	Requirement + Test	Result-Remark	Verdict
Group D	2 Modules	Sample Group ID D1, D2	P
10.11	Thermal cycling test (200 cycles).....:	200	P
	Final measurements	See table 10.11 D	P
Group E	2 Modules	Sample Group ID E1, E2	P
10.13	Damp heat test.....:	1000h	P
	Final measurements	See table 10.13 E	P
Group E1	1 Module	Sample Group ID E1	P
10.16	Mechanical load test.....:	2400Pa & 5400Pa	P
10.16.4	-No open-circuits or ground faults detected		P
	Final measurements	See table 10.16 E1	P
Group E2	1 Module	Sample Group ID E2	P
10.17	Hail test	25 mm	P
	Number of points impacted.....:	11	P
	Final measurements	See table 10.17 E2	P
	Final measurement	All modules	P
10.15	Wet leakage current test	See table 10.15 F	P







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CIN NO U21014UP1987PTC008956



TC-6468

Test Report No: SC24SPI01115\_1 Page 37 of 59  
Dated : 16/09/2024

Clause	Requirement + Test	Result-Remark	Verdict
<b>10.1 Initial</b>	<b>TABLE: Visual inspection (Initial)</b>		P
Test Date [MM/DD/YYYY].....:	07/08/2024		-
Sample #	Nature and position of initial findings – comments or attach photos		-
1	No visual defect		P
2	No visual defect		P
3	No visual defect		P
4	No visual defect		P
5	No visual defect		P
6	No visual defect		P
7	No visual defect		P
8	No visual defect		P
9	No visual defect		P
10	No visual defect		P
11	No visual defect		P
12	No visual defect		P
13	No visual defect		P
14	No visual defect		P
Supplementary information: Nil			

<b>10.2 Initial</b>	<b>TABLE: Maximum power determination (Initial)</b>						P
Test Date [MM/DD/YYYY].....:	07/08/2024						-
Module temperature [°C].....:	25						-
Irradiance [W/m <sup>2</sup> ].....:	1000						-
Sample#	Voc[V]	Vmp [V]	Isc [A]	Imp [A]	Pmp [W]	FF[%]	
1	53.48	45.22	14.085	13.309	601.83	79.90	
2	53.52	45.21	14.092	13.311	601.79	79.79	
3	53.51	45.20	14.091	13.305	601.39	79.76	
4	53.53	45.23	14.095	13.286	600.93	79.64	
5	53.51	45.21	14.085	13.290	600.84	79.72	
6	53.48	45.19	13.075	13.292	600.67	85.90	
7	53.49	45.18	13.962	13.279	599.95	80.33	
8	53.48	45.17	13.992	13.281	599.90	80.17	
9	53.48	45.20	14.061	13.291	600.75	79.89	
10	53.45	45.19	14.024	13.282	600.21	80.07	
11	53.43	45.22	14.024	13.298	601.34	80.25	
12	53.41	45.17	13.985	13.292	600.40	80.38	
13	53.48	45.20	13.979	13.282	600.35	80.30	
14	53.42	45.21	13.995	13.299	601.25	80.42	
Supplementary information: Nil							





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CIN NO U21014UP1987PTC008956



Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 38 of 59

10.3 Initial		Table: Insulation test (initial)		P
Test Date [MM/DD/YYYY].....:			07/08/2024	-
Test Voltage applied [V].....:			4000V for 1min & 1500V for 2min	-
Sample#	Measured	Required	Dielectric break down Yes(description)/No	Result
	GΩ	MΩ		
1	11.56	14.34	No	P
2	10.89	14.34	No	P
3	12.56	14.34	No	P
4	13.41	14.34	No	P
5	10.52	14.34	No	P
6	9.89	14.34	No	P
7	11.69	14.34	No	P
8	12.65	14.34	No	P
9	13.49	14.34	No	P
10	10.55	14.34	No	P
11	12.14	14.34	No	P
12	11.69	14.34	No	P
13	9.69	14.34	No	P
14	14.25	14.34	No	P

Supplementary information: Area of module 2.79[m<sup>2</sup>].

10.15 Initial		TABLE: Wet leakage current test (Initial)		P
Test Date [MM/DD/YYYY].....:			07/08/2024	-
Test Voltage applied [V].....:			1500V	-
Solution resistivity [Ω cm].....:			<3500 at 22 ± 3°C	2491
Solution temperature [°C].....:			23.2	-
Sample#	Measured[GΩ]	Limit[MΩ]	Result	
1	6.58	14.34	P	
2	5.56	14.34	P	
3	5.69	14.34	P	
4	6.98	14.34	P	
5	6.29	14.34	P	
6	7.25	14.34	P	
7	8.97	14.34	P	
8	5.68	14.34	P	
9	7.76	14.34	P	
10	8.24	14.34	P	
11	6.12	14.34	P	
12	6.68	14.34	P	
13	5.52	14.34	P	
14	9.25	14.34	P	

Supplementary information: Area of module 2.79[m<sup>2</sup>].





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Test Report No: SC24SPI01115\_1  
 Dated : 16/09/2024

10.4 B TABLE: Measurement of temperature coefficients			P
Test Date [MM/DD/YYYY].....:	07/09/2024		-
Ambient air temperature [°C].....:	25		-
Irradiance [W/m <sup>2</sup> ].....:	1000		-
Module temperature [°C] high/low.....:	65 /25		-
Sample#	Parameter	Calculated Value	-
2	Short circuit current $\alpha$ [%/°C].....:	0.0493	-
	Open circuit voltage $\beta$ [%/°C].....:	-0.2987	-
	Peak power $\delta$ [%/°C].....:	-0.3256	-
Supplementary information: Nil			

10.5 B TABLE: Measurement of Nominal Operating Cell Temperature [NOCT, °C]				P
Test Date [MM/DD/YYYY].....:	07/10/2024	07/12/2024	07/15/2024	-
Wind velocity [m/s] high/low.....:	1.16/0.82	1.21/0.78	1.14/0.72	-
Ambient temperature [°C] high/low.....:	35.24/29.48	36.52/30.16	34.91/31.67	-
Irradiance [W/m <sup>2</sup> ] high/low.....:	910.2/533.4	856.2/469.5	924.2/526.5	-
Module temperature [°C] high/low.....:	53.87/30.58	52.89/31.49	51.12/32.45	-
Wind velocity [m/s] (average).....:	0.96	1.04	0.82	-
Ambient temperature [°C] (average).....:	32.89	33.54	32.98	-
NOCT correction factor [°C].....:	1	2	1	-
Calculated NOCT [°C].....:	45.67	46.80	45.72	-
Sample#	Average NOCT[°C]			
2	46.06			
Supplementary information: Nil				

10.6 B TABLE: Performance at STC and NOCT							P
Sample No.....:	2						
Test Date [MM/DD/YYYY].....:	08/02/2024						-
Wind velocity [m/s] high/low.....:	N/A						-
Test method.....:	[X]	Indoor	[ ]	Outdoor			-
Ambient air temperature [°C].....:	25						-
Irradiance [W/m <sup>2</sup> ] High/Low.....:	1000						-
Module temperature [°C] high/low.....:	25°C for STC / 46.06°C for NOCT						-
Condition	Voc [V]	Vmp [V]	Isc [A]	Imp [A]	Pmp [W]	FF[%]	
STC	53.49	45.21	14.091	13.311	601.79	79.84	
NOCT	49.47	41.33	10.250	9.640	398.42	78.57	
Supplementary information: Nil							





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CIN NO U21014UP1987PTC008956



TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 40 of 59

10.7 B TABLE: Performance at low irradiance						P
Test Date [MM/DD/YYYY].....:		08/02/2024				-
Ambient air temperature [°C].....:		N/A				-
Irradiance [W/m <sup>2</sup> ].....:		200				-
Module temperature [°C].....:		25				-
Test method.....:		[X] Data corrected to a 25°C cell temperature and 200W/m <sup>2</sup> irradiance [ ] Directly measured				-
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]
2	40.81	35.62	3.910	3.500	124.67	78.13
Supplementary information: Nil						

10.8 B TABLE: Outdoor exposure test		P
Sample No.....:	2	-
Test Date [MM/DD/YYYY] start/end.....:	08/02/2024 to 08/10/2024	-
Total irradiation dosage [kWh/m <sup>2</sup> ].....:	60	-
Supplementary information: Nil		

(10.1 Visual inspection after outdoor exposure test)		P
Test Date [MM/DD/YYYY].....:	08/02/2024	-
Sample#	Nature and position of initial findings – comments or attach photos	-
2	No visual defect	P
Supplementary information: Nil		

(10.2 Maximum power determination after outdoor exposure test)						P
Test Date [MM/DD/YYYY].....:		08/10/2024				-
Module temperature [°C].....:		25				-
Irradiance [W/m <sup>2</sup> ].....:		1000				-
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]
2	53.48	45.20	14.090	13.261	599.40	79.54
1(control)	53.47	45.21	14.082	13.309	601.70	79.91
Pmp degradation after this test [%] ≤ 5%.....:		-0.40 for Sample 2				-

(10.3 Insulation test after outdoor exposure test)					P
Test Date [MM/DD/YYYY].....:		08/10/2024			-
Test Voltage applied [V].....:		4000V for 1min & 1500V for 2min			-
Sample#	Measured	Required	Dielectric breakdown		Result
	GΩ	MΩ	Yes(description)	No	
2	10.25	14.34	No	-	P
Supplementary information: Area of module 2.79[m <sup>2</sup> ], Minimum requirement according to the standard is 40MΩm <sup>2</sup>					







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TC-6468

Test Report No: SC24SPI01115\_1  
 Dated : 16/09/2024

Page 41 of 59

10.18B	TABLE: Bypass diode thermal test			P
Sample No.....	2			-
Test Date [MM/DD/YYYY] start/end.....	08/11/2024			-
Module temperature [°C].....	75±5			-
Number of diodes in junction box.....	3			-
Diode manufacturer.....	GENX PV INDIA PRIVATE LIMITED.			-
Diode type designation.....	MK5045			-
Max. permissible junction temperature $T_{jmax}$ [°C] (according to diode datasheet).....	200			-
	Diode1	Diode2	Diode3	Result
Current flow applied [A].....	14.08	14.08	14.08	-
Max. diode surface temperature [°C] a or b:	131.2	134.6	132.1	-
Voltage drop [V].....	0.39	0.33	0.37	-
Power dissipation [W].....	5.49	4.65	5.21	-
Thermal resistance junction to leads (RTHJL)/to case (RTHJC) [K/W] (according to datasheet).....	2.0	2.0	2.0	-
Calculated max. junction temperature $T_{jcalc}$ [°C] a or b.....	142.18	143.89	142.52	-
$T_{jcalc} < T_{jmax}$ (test passed)? Yes/No.....	Yes	Yes	Yes	-
Current flow (1.25 * Isc) [A].....	17.60	17.60	17.60	-
Max. diode surface temperature [°C] a or b :	151.6	152.9	150.2	-
Remarks: After completion of the test, diode is still functional. (a: measured at diode case or ambient near diode case, b: measured at diode leads)				

(10.1 Visual inspection after bypass diode thermal test)		P
Test Date [MM/DD/YYYY].....	08/11/2024	-
Sample#	Nature and position of initial findings – comments or attach photos	-
2	No visual defect	P

Supplementary information: Nil

(10.2 Maximum power determination after bypass diode thermal test)							P
Test Date [MM/DD/YYYY].....	08/11/2024						-
Module temperature [°C].....	25						-
Irradiance [W/m <sup>2</sup> ].....	1000						-
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]	
2	53.45	45.15	14.089	13.212	596.52	79.21	
1 (control)	53.42	45.21	14.081	13.308	601.65	79.99	
Pmp degradation after this test [%] ≤5%.....	-0.48 for Sample 2						-

Supplementary information: Nil

(10.3 Insulation test after bypass diode thermal test)					P
Test Date [MM/DD/YYYY].....	08/11/2024				-
Test Voltage applied [V].....	4000V for 1min & 1500V for 2min				-
Sample#	Measured	Required	Dielectric breakdown		Result
	GΩ	MΩ	Yes(description)	No	
2	10.14	14.34	No	-	P

Supplementary information: Area of module 2.79[m<sup>2</sup>], Minimum requirement according to the standard is 40MΩm<sup>2</sup>





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 CIN NO U21014UP1987PTC008956



TC-6468

Test Report No: SC24SPI01115\_1 Page 42 of 59  
 Dated : 16/09/2024

10.9 B	TABLE: Hot-spot endurance test						P
Sample No. ....:	2						-
Test Date [MM/DD/YYYY] start/end.....:	08/12/2024						-
Cell interconnection circuit.....:	[ ]	S	[X]	SP	[ ]	SPS	-
Module temperature at thermal equilibrium [°C].....:	54.3						-
Determination of worst case cell							-
Maximum measured cell temperature in 5hours [°C]:	77.9						-
Shading rate [%].....:	100						-
Supplementary information: Nil							

10.9 B	TABLE: Hot-spot endurance test						P
Sample No. ....:	10						-
Test Date [MM/DD/YYYY] start/end.....:	08/12/2024						-
Cell interconnection circuit.....:	[ ]	S	[X]	SP	[ ]	SPS	-
Module temperature at thermal equilibrium [°C].....:	56.2						-
Determination of worst case cell							-
Maximum measured cell temperature in 5hours [°C]:	76.2						-
Shading rate [%].....:	100						-
Supplementary information: Nil							

(10.1 Visual inspection after hot-spot endurance test)							P
Test Date [MM/DD/YYYY].....:						08/12/2024	-
Sample#	Nature and position of initial findings						-
2	No visual defect						P
10	No visual defect						P
Supplementary information: Nil							

(10.2 Maximum power determination after hot-spot endurance test)							P
Test Date [MM/DD/YYYY].....:						08/12/2024	-
Module temperature [°C].....:						25	-
Irradiance [W/m²].....:						1000	-
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]	
2	53.41	45.08	14.087	13.151	592.85	78.80	
1 (control)	53.39	45.20	14.081	13.307	601.48	80.01	
10	53.39	45.15	13.981	13.251	598.28	80.15	
9 (control)	53.43	45.19	14.024	13.292	600.67	80.16	
Pmp degradation after this test [%] ≤5%.....:						-0.62 & -0.32 for Sample 2 & 10 respectively	
Supplementary information: Nil							

(10.3 Insulation test after hot-spot endurance test)							P
Test Date [MM/DD/YYYY].....:						08/12/2024	-
Test Voltage applied [V].....:						4000V for 1min & 1500V for 2min	-
Sample#	Measured	Required	Dielectric breakdown			Result	
	GΩ	MΩ	Yes(description)		No		
2	9.87	14.34	No		-	P	
10	10.36	14.34	No		-	P	
Supplementary information: Area of module 2.79[m²], Minimum requirement according to the standard is 40MΩm²							





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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 43 of 59

10.10C	TABLE: UV preconditioning test	P
Test Date [MM/DD/YYYY] start/end.....:	07/09/2024 to 07/17/2024	-
Module temperature [°C].....:	60 ± 5	-
Total UV Irradiation 280-400nm [kWh/m <sup>2</sup> ].....:	15.0	-
Irradiation 280-320nm [kWh/m <sup>2</sup> ].....:	5.0	-
Sample#	Open circuits (Yes/No)	-
3	No open circuit found	P
4	No open circuit found	P

Supplementary information: Nil

10.1 Visual inspection after UV preconditioning test	P
Test Date [MM/DD/YYYY].....:	07/17/2024
Sample#	Nature and position of initial findings
3	No visual defect
4	No visual defect

Supplementary information: Nil

10.2 Maximum power determination after UV preconditioning test	P					
Test Date [MM/DD/YYYY].....:	07/17/2024					
Module temperature [°C].....:	25					
Irradiance [W/m <sup>2</sup> ].....:	1000					
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]
3	53.49	45.18	14.075	13.221	597.32	79.34
4	53.48	45.17	14.095	13.208	596.61	79.15
1 (Control)	53.38	45.19	14.079	13.306	601.30	80.01
Pmp degradation after this test [%] ≤5%.....:	-0.68 & -0.72 for Sample 3 & 4 respectively					-

Supplementary information: Nil

10.3 Insulation test after UV preconditioning test	P				
Test Date [MM/DD/YYYY].....:	07/17/2024				
Test Voltage applied [V].....:	4000V for 1min & 1500V for 2min				
Sample#	Measured	Required	Dielectric breakdown		Result
	GΩ	MΩ	Yes(description)	No	
3	11.56	14.34	No	-	P
4	13.12	14.34	No	-	P

Supplementary information: Area of module 2.79[m<sup>2</sup>], Minimum requirement according to the standard is 40MΩm<sup>2</sup>





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 CIN NO U21014UP1987PTC008956



Test Report No: SC24SPI01115\_1 Page 44 of 59  
 Dated : 16/09/2024

<b>10.11C</b>	<b>TABLE: Thermal cycling 50 test</b>	P
Test Date [MM/DD/YYYY] start/end.....:	07/19/2024 to 07/31/2024	-
Total cycles (50).....:	50	-
Sample#	Open circuits (Yes/No)	-
3	No open circuit found	P
4	No open circuit found	P

Supplementary information: Nil

**(10.1 Visual inspection after thermal cycling 50 test)** P

Test Date [MM/DD/YYYY].....:	07/31/2024	-
Sample#	Nature and position of initial findings	-
3	No visual defect	P
4	No visual defect	P

Supplementary information: Nil

**(10.2 Maximum power determination after thermal cycling 50 test)** P

Test Date [MM/DD/YYYY].....:	07/31/2024	-
Module temperature [°C].....:	25	-
Irradiance [W/m <sup>2</sup> ].....:	1000	-

Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]
3	53.46	45.16	14.072	13.124	592.68	78.78
4	53.45	45.14	14.093	13.112	591.88	78.57
1 (Control)	53.36	45.19	14.078	13.305	601.25	80.04

Pmp degradation after this test [%] ≤5%.....: -0.78 & -0.79 for Sample 3 & 4 respectively -

Supplementary information: Nil

**(10.3 Insulation test after thermal cycling 50 test)** P

Test Date [MM/DD/YYYY].....:	07/31/2024	-
Test Voltage applied [V].....:	4000V for 1min & 1500V for 2min	-

Sample#	Measured	Required	Dielectric breakdown		Result
	GΩ	MΩ	Yes (description)	No	
3	10.54	14.34	No	-	P
4	11.65	14.34	No	-	P

Supplementary information: Area of module 2.79[m<sup>2</sup>], Minimum requirement according to the standard is 40MΩm<sup>2</sup>





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CIN NO U21014UP1987PTC008956



TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 45 of 59

<b>10.12C</b>	<b>TABLE: Humidity freeze 10 test</b>					P
Test Date [MM/DD/YYYY] start/end.....:	08/02/2024 to 08/13/2024					-
Total cycles (10).....:	10					-
Sample#	Open circuits(Yes/No)					-
3	No open circuit found					P
4	No open circuit found					P
Supplementary information: Nil						

<b>(10.1 Visual inspection after humidity freeze 10 test)</b>						P
Test Date [MM/DD/YYYY].....:	08/13/2024					-
Sample#	Nature and position of initial findings					-
3	No visual defect					P
4	No visual defect					P
Supplementary information: Nil						

<b>(10.2 Maximum power determination after humidity freeze 10 test)</b>						P	
Test Date [MM/DD/YYYY].....:	08/13/2024					-	
Module temperature [°C].....:	25					-	
Irradiance [W/m <sup>2</sup> ].....:	1000					-	
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]	
3	53.45	45.13	14.068	13.053	589.08	78.34	
4	53.42	45.11	14.061	13.018	587.24	78.18	
1(Control)	53.32	45.18	14.072	13.305	601.12	80.12	
Pmp degradation after this test [%] ≤5%.....:						-0.61 & -0.78 for Sample 3 & 4 respectively	-

<b>(10.3 Insulation test after humidity freeze 10 test)</b>						P
Test Date [MM/DD/YYYY].....:	08/13/2024					-
Test Voltage applied [V].....:	4000V for 1min & 1500V for 2min					-
Sample#	Measured	Required	Dielectric breakdown			Result
	GΩ	MΩ	Yes(description)	No		
3	9.87	14.34	No	-	P	
4	10.25	14.34	No	-	P	
Supplementary information: Area of module 2.79[m <sup>2</sup> ], Minimum requirement according to the standard is 40MΩm <sup>2</sup>						

<b>10.14C1</b>	<b>TABLE: Robustness of terminations test</b>					P
Test Date [MM/DD/YYYY] start/end....:	08/14/2024					-
Types of terminations	Type A					-
Applied force in all directions [N]..... :	40 for tensile test, 20 for bending test					-
Sample#	Open circuits(Yes/No)					-
4	No open circuit found					P
Supplementary information: Nil						

<b>(10.1 Visual inspection after robustness of terminations test)</b>						P
Test Date [MM/DD/YYYY].....:	08/14/2024					-
Sample#	Nature and position of initial findings					-
4	No visual defect					P
Supplementary information: Nil						







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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 46 of 59

<b>(10.2 Maximum power determination after robustness of terminations test)</b>							P
Test Date [MM/DD/YYYY].....:			08/14/2024				-
Module temperature [°C].....:			25				-
Irradiance [W/m <sup>2</sup> ].....:			1000				-
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]	
4	53.38	45.09	14.059	13.012	586.71	78.18	
1 (Control)	53.29	45.17	14.068	13.303	600.90	80.15	
Pmp degradation after this test [%] ≤5%.....:			-0.09 for Sample 4				-
Supplementary information: Nil							

<b>(10.3 Insulation test after robustness of terminations test)</b>							P
Test Date [MM/DD/YYYY].....:			08/14/2024				-
Test Voltage applied [V].....:			4000V for 1min & 1500V for 2min				-
Sample#	Measured	Required	Dielectric breakdown				-
	GΩ	MΩ	Yes(description)	No			
4	9.56	14.34	No	-			P
Supplementary information: Area of module 2.79[m <sup>2</sup> ], Minimum requirement according to the standard is 40MΩm <sup>2</sup>							

10.11D	TABLE: Thermal cycling 200 test	P	
Test Date [MM/DD/YYYY] start/end.....:		07/09/2024 to 08/24/2024	-
Total cycles (200).....:		200	-
Applied current [A].....:		13.29	-
Sample#	Open circuits(Yes/No)		
5	No open circuit found		P
6	No open circuit found		P
11	No open circuit found		P
12	No open circuit found		P
Supplementary information: Nil			

<b>(10.1 Visual inspection after thermal cycling 200 test)</b>							P
Test Date [MM/DD/YYYY].....:			08/24/2024				-
Sample#	Nature and position of initial findings						
5	No visual defect						P
6	No visual defect						P
11	No visual defect						P
12	No visual defect						P
Supplementary information: Nil							





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CIN NO U21014UP1987PTC008956



TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 47 of 59

<b>(10.2 Maximum power determination after thermal cycling 200 test)</b>						P
Test Date [MM/DD/YYYY].....:		08/24/2024				-
Module temperature [°C].....:		25				-
Irradiance [W/m <sup>2</sup> ].....:		1000				-
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]
5	53.49	45.14	14.078	13.134	592.90	78.73
6	53.41	45.12	14.072	13.112	591.61	78.72
1 (Control)	53.26	45.17	14.062	13.303	600.90	80.23
11	53.43	45.21	14.024	13.112	592.79	79.11
12	53.38	45.17	13.952	13.081	590.87	79.34
9 (Control)	53.25	45.13	13.981	13.293	599.91	80.58
Pmp degradation after this test [%] ≤5%.....:		-1.32, -1.51, -1.42 & -1.59 for Sample 5, 6, 11 & 12 respectively				-
Supplementary information: Nil						





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TC-6468

Test Report No: SC24SPI01115\_1  
 Dated : 16/09/2024

Page 48 of 59

Clause	Requirement + Test	Result-Remark	Verdict
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<b>(10.3 Insulation test after thermal cycling 200 test)</b>					P
Test Date [MM/DD/YYYY].....:		08/24/2024		-	
Test Voltage applied [V].....:		4000V for 1min & 1500V for 2min		-	
Sample#	Measured	Required	Dielectric breakdown		Result
	GΩ	MΩ	Yes(description)	No	
5	9.52	14.34	No	-	P
6	8.45	14.34	No	-	P
11	10.56	14.34	No	-	P
12	10.10	14.34	No	-	P
Supplementary information: Area of module 2.79[m <sup>2</sup> ], Minimum requirement according to the standard is 40MΩm <sup>2</sup>					

<b>10.13E</b>		<b>TABLE: Damp heat 1000 test</b>			P
Test Date [MM/DD/YYYY] start/end:		07/09/2024 to 08/21/2024			-
Total hours (1000).....:		1000			-
Sample#	Open circuits(Yes/No)				-
7	No open circuit found				P
8	No open circuit found				P
13	No open circuit found				P
14	No open circuit found				P
Supplementary information: Nil					

<b>(10.1 Visual inspection after damp heat 1000 test)</b>					P
Test Date [MM/DD/YYYY].....:		08/21/2024			-
Sample#	Nature and position of initial findings				-
7	No visual defect				P
8	No visual defect				P
13	No visual defect				P
14	No visual defect				P
Supplementary information: Nil					

<b>(10.3 Insulation test after damp heat 1000 test)</b>					P
Test Date [MM/DD/YYYY].....:		08/21/2024			-
Test Voltage applied [V].....:		4000V for 1min & 1500V for 2min			-
Sample#	Measured	Required	Dielectric breakdown		Result
	GΩ	MΩ	Yes(description)	No	
7	10.25	14.34	No	-	P
8	11.27	14.34	No	-	P
13	7.88	14.34	No	-	P
14	12.24	14.34	No	-	P
Supplementary information: Area of module 2.79[m <sup>2</sup> ], Minimum requirement according to the standard is 40MΩm <sup>2</sup>					





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TC-6468

Test Report No: SC24SPI01115\_1  
 Dated : 16/09/2024

Page 49 of 59

(10.15 Wet leakage current test after damp heat 1000 test)				P
Test Date [MM/DD/YYYY].....:		08/21/2024		-
Test Voltage applied [V].....:		1500V		-
Solution resistivity [ $\Omega$ cm].....:		< 3500 $\Omega$ cm at 22 $\pm$ 3°C	2412	-
Solution temperature [°C].....:		22.2		-
Sample#	Measured[G $\Omega$ ]	Limit[M $\Omega$ ]		Result
7	6.58	14.34		P
8	4.21	14.34		P
13	4.23	14.34		P
14	7.75	14.34		P

Supplementary information: Area of module 2.79[m<sup>2</sup>], Minimum requirement according to the standard is 40M $\Omega$ m<sup>2</sup>

(10.2 Maximum power determination after damp heat 1000 test)							P
Test Date [MM/DD/YYYY].....:		08/21/2024				-	
Module temperature [°C].....:		25				-	
Irradiance [W/m <sup>2</sup> ].....:		1000				-	
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]	
7	53.45	45.15	13.950	13.120	592.37	79.45	
8	53.38	45.13	13.920	13.110	591.65	79.63	
1 (Control)	53.21	45.17	14.052	13.302	600.85	80.36	
13	53.45	45.15	13.952	13.121	592.41	79.44	
14	53.42	45.15	13.995	13.132	592.91	79.31	
1 (Control)	53.21	45.12	13.952	13.291	599.69	80.78	
Pmp degradation after this test [%] $\leq$ 5%.....:			-1.26, -1.37, -1.32 & -1.39 for Sample 7, 8, 13 & 14 respectively			-	

Supplementary information: Nil

10.16E1	TABLE: Mechanical load test		P
Sample#.....:	7		-
Test Date [MM/DD/YYYY].....:	08/22/2024		-
Mounting method.....:	As per manual	As per manual	-
Load applied to.....:	Front side	Back side	-
Mechanical load [Pa].....:	2400	2400	-
First cycle time (start/end).....:	10:10 to 11:10	11:30 to 12:30	-
Intermittent open-circuit (Yes/No).....:	No	No	-
Mechanical load [Pa].....:	2400	2400	-
Second cycle time (start/end).....:	12:40 to 1:40	2:20 to 3:20	-
Intermittent open-circuit (Yes/No).....:	No	No	-
Mechanical load [Pa].....:	5400	2400	-
Third cycle time (start/end).....:	3:35 to 4:35	4:50 to 5:50	-
Intermittent open-circuit (Yes/No).....:	No	No	-

Supplementary information: Nil





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Test Report No: SC24SPI01115\_1  
 Dated : 16/09/2024

Clause	Requirement + Test	Result-Remark	Verdict
<b>10.16E1</b>	<b>TABLE: Mechanical load test</b>		P
Sample#.....	13		-
Test Date [MM/DD/YYYY].....	08/23/2024		-
Mounting method.....	As per manual	As per manual	-
Load applied to.....	Front side	Back side	-
Mechanical load [Pa].....	2400	2400	-
First cycle time (start/end).....	10:10 to 11:10	11:30 to 12:30	-
Intermittent open-circuit (Yes/No).....	No	No	-
Mechanical load [Pa].....	2400	2400	-
Second cycle time (start/end).....	12:40 to 1:40	2:20 to 3:20	-
Intermittent open-circuit (Yes/No).....	No	No	-
Mechanical load [Pa].....	5400	2400	-
Third cycle time (start/end).....	3:35 to 4:35	4:50 to 5:50	-
Intermittent open-circuit (Yes/No).....	No	No	-
Supplementary information: Nil			

<b>(10.1 Visual inspection after mechanical load test)</b>			P
Test Date [MM/DD/YYYY].....	08/23/2024		-
Sample#	Nature and position of initial findings		-
7	No visual defect		P
13	No visual defect		P
Supplementary information: Nil			

<b>(10.2 Maximum power determination after mechanical load test)</b>							P
Test Date [MM/DD/YYYY].....	08/23/2024						-
Module temperature [°C].....	25						-
Irradiance [W/m²].....	1000						-
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]	
7	53.42	45.12	13.962	13.086	590.44	79.16	
1 (Control)	53.21	45.17	14.052	13.301	600.81	80.35	
13	53.38	45.08	13.914	13.122	591.54	79.64	
9 (Control)	53.18	45.12	13.926	13.293	599.78	80.99	
Pmp degradation after this test [%] ≤5%.....	-0.33 & -0.15 for Sample 7 & 13 respectively						-
Supplementary information: Nil							

<b>(10.3 Insulation test after mechanical load test)</b>					P
Test Date [MM/DD/YYYY].....	08/23/2024				-
Test Voltage applied [V].....	4000V for 1min & 1500V for 2min				-
Sample#	Measured	Required	Dielectric breakdown		Result
	GΩ	MΩ	Yes(description)	No	
7	9.74	14.34	No	-	P
13	7.25	14.34	No	-	P
Supplementary information: Area of module 2.79[m²], Minimum requirement according to the standard is 40MΩm²					







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TC-6468

Test Report No: SC24SPI01115\_1  
 Dated : 16/09/2024

Page 51 of 59

10.17E2	TABLE: Hail impact test	P
Test Date [MM/DD/YYYY].....:	08/28/2024	-
Ice ball size [mm].....:	25	-
Ice ball weight [g].....:	7.53	-
Ice ball velocity [m/s].....:	23.15	-
Number of impact locations.....:	11	-
Sample#	Open circuits (Yes/No)	-
8	No open circuit found	-

Supplementary information: Nil

(10.1 Visual inspection after hail impact test)	P
Test Date [MM/DD/YYYY].....:	08/28/2024
Sample#	Nature and position of initial findings
8	No visual defect

Supplementary information: Nil

(10.2 Maximum power determination after hail impact test)	P					
Test Date [MM/DD/YYYY].....:	08/28/2024					
Module temperature [°C].....:	25					
Irradiance [W/m <sup>2</sup> ].....:	1000					
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]
8	53.33	45.12	13.918	13.098	590.98	79.62
1 (Control)	53.21	45.17	14.046	13.298	600.67	80.37
Pmp degradation after this test [%] ≤5%.....:	-0.13 for Sample 8					-

Supplementary information: Nil

(10.3 Insulation test after hail impact test)	P				
Test Date [MM/DD/YYYY].....:	08/28/2024				
Test Voltage applied [V].....:	4000V for 1min & 1500V for 2min				
Sample#	Measured	Required	Dielectric breakdown		Result
	GΩ	MΩ	Yes(description)	No	
8	10.12	14.34	No	-	P

Supplementary information: Area of module 2.79[m<sup>2</sup>], Minimum requirement according to the standard is 40MΩm<sup>2</sup>





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Test Report No: SC24SPI01115\_1  
 Dated : 16/09/2024

Page 52 of 59

10.2 F TABLE: Maximum power determination (Final)								P
Test Date [MM/DD/YYYY].....:			08/12/2024 to 08/28/2024					-
Module temperature [°C].....:			25					-
Irradiance [W/m <sup>2</sup> ].....:			1000					-
Sample#	Voc[V]	Vmp[V]	Isc[A]	Imp[A]	Pmp [W]	FF[%]	Degradation [%]	Limit[%]
1	53.21	45.17	14.046	13.298	600.67	80.37	-	- 8
2	53.41	45.08	14.087	13.151	592.85	78.80	-1.49	- 8
3	53.45	45.13	14.068	13.053	589.08	78.34	-2.05	- 8
4	53.38	45.09	14.059	13.012	586.71	78.18	-2.37	- 8
5	53.49	45.14	14.078	13.134	592.90	78.73	-1.32	- 8
6	53.41	45.12	14.072	13.112	591.61	78.72	-1.51	- 8
7	53.42	45.12	13.962	13.086	590.44	79.16	-1.58	- 8
8	53.33	45.12	13.918	13.098	590.98	79.62	-1.49	- 8
9	53.18	45.12	13.926	13.293	599.78	80.99	-	- 8
10	53.39	45.15	13.981	13.251	598.28	80.15	-0.32	- 8
11	53.43	45.21	14.024	13.112	592.79	79.11	-1.42	- 8
12	53.38	45.17	13.952	13.081	590.87	79.34	-1.59	- 8
13	53.38	45.08	13.914	13.122	591.54	79.64	-1.47	- 8
14	53.35	45.11	13.881	13.110	591.39	79.86	-1.64	- 8
Supplementary information: Nil								

10.15F TABLE: Wet leakage current test (Final)				P
Test Date [MM/DD/YYYY].....:		08/28/2024		-
Test Voltage applied [V].....:		1500V		-
Solution resistivity [Ωcm].....:		< 3500 Ω cm at 22 ± 3°C	2486	-
Solution temperature [°C].....:		23.3		-
Sample#	Measured[GΩ]	Limit[MΩ]	Result	
1	5.56	14.34	P	
2	4.68	14.34	P	
3	4.21	14.34	P	
4	5.69	14.34	P	
5	5.58	14.34	P	
6	7.14	14.34	P	
7	5.21	14.34	P	
8	4.10	14.34	P	
9	5.69	14.34	P	
10	6.87	14.34	P	
11	5.63	14.34	P	
12	5.89	14.34	P	
13	3.25	14.34	P	
14	5.99	14.34	P	
Supplementary information: Area of module 2.79[m <sup>2</sup> ], Minimum requirement according to the standard is 40MΩm <sup>2</sup>				





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CIN NO U21014UP1987PTC008956



Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 53 of 59

### List of Annexes

- Annex 1: List of measurement equipment
- Annex 2: Spectrum of the lamp used for the UV pre-screening test (Optional)
- Annex 3: Statement of the estimated uncertainty of the test results
- Annex 4: Enclosures (Photographs)
- Annex 5: Electrical rating of series models





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CIN NO U21014UP1987PTC008956



Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 54 of 59

## Annex 1: List of measurement equipment

Description	Identification#	Application
Visual inspection test setup	URS/LAB/Lab/1323	Visual inspection test
Sun simulator	URS/LAB/Lab/841	Maximum power determination, Performance at STC, Performance at low irradiance, Measurement of temperature coefficient
IV Curve tracer	URS/LAB/Lab/1046	Performance at low irradiance, Hot spot endurance test, Bypass diode functionality test,
DC Power supply	URS/LAB/Lab/847	Insulation test, Wet leakage test
Hipot tester	URS/LAB/Lab/874	Insulation test, Wet leakage test
Thermal imager	URS/LAB/Lab/640	Hot spot endurance test
Bypass diode tester	URS/LAB/Lab/856	Bypass diode test
NMOT/NOCT	URS/LAB/Lab/846	NOCT test, Temperature test, Outdoor exposure test
UV chamber	URS/LAB/Lab/859	UV preconditioning
Damp heat chamber	URS/LAB/Lab/860	Damp heat test
Humidity freeze chamber	URS/LAB/Lab/861	Temperature cycling test
Damp heat chamber	URS/LAB/Lab/1381	Temperature cycling test, Bypass diode test
DC Power supply	URS/LAB/Lab/926	Temperature cycling test,
Temperature data logger	URS/LAB/Lab/925	Temperature cycling test, Bypass diode test
Continuity tester	URS/LAB/Lab/852	Continuity test
Robustness of termination	URS/LAB/Lab/842	Robustness of termination test
Wet leakage tester	URS/LAB/Lab/855	Wet leakage test
Glass Thermometer	URS/LAB/Lab/979	Wet leakage test
Mechanical load	URS/LAB/Lab/853	Mechanical load test
Hail tester	URS/LAB/Lab/849	Hail tester test
Vernier caliper	URS/LAB/Lab/898	For dimension
Measuring tape	URS/LAB/Lab/937.1	For dimension





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CIN NO U21014UP1987PTC008956



Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 55 of 59

**Annex 2:** Spectrum of the lamp used for the UV pre-screening test (Optional)

**Annex 3:** Statement of the estimated uncertainty of the test results

For Pmp – Measurement uncertainty is  $\pm 2.4\%$   
For Isc – Measurement uncertainty is  $\pm 2.1\%$   
For Voc – Measurement uncertainty is  $\pm 1.8\%$







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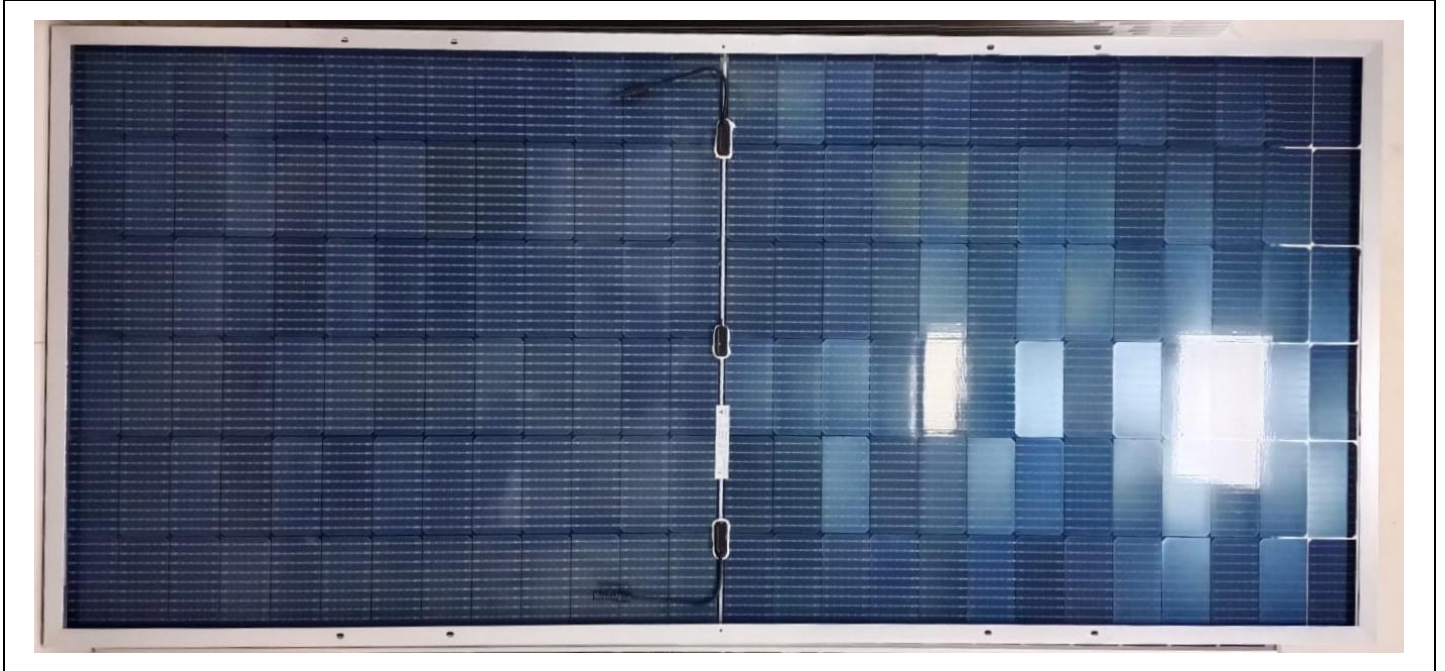
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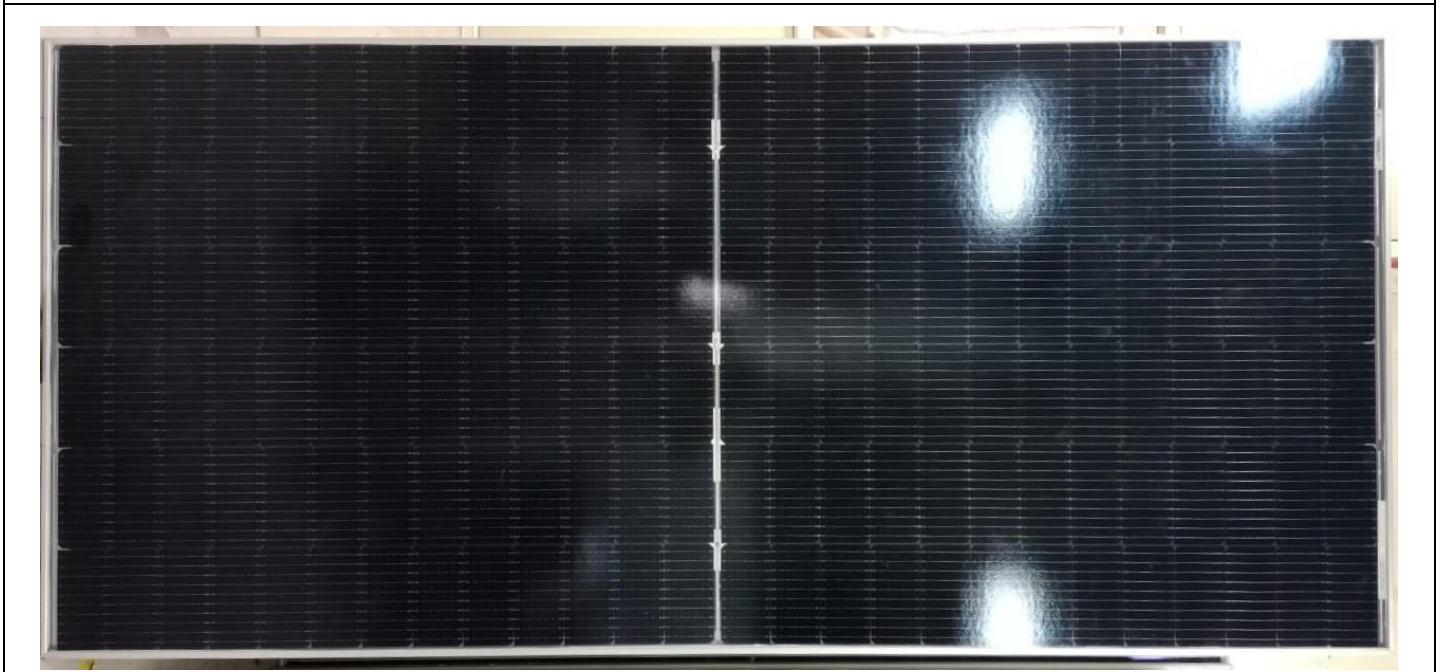
Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 56 of 59

## Annex 4: Enclosures (Photographs)



Rear view



Front view









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CIN NO U21014UP1987PTC008956



Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 57 of 59

	
<p>Junction Box closed view</p>	<p>Junction Box opened view</p>
	
<p>Negative Connector</p>	<p>Positive Connector</p>





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A-29, Sector-5, Noida-201301  
T +91 (120) 4516264-65 F +91 (120) 4750296  
E info@urs-labs.com W www.urs-labs.com  
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TC-6468

Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 58 of 59

## Annex 5: Electrical rating of series models

Model	System Voltage (V)	Electrical Rating					Fuse Rating (A)	Dimension			Total no. of cells (Half cut cells) (no.)	No of cells per by bypass diode (no.)
		Voc (V)	Vm (V)	Isc (A)	Im (A)	Pm (W)		L (mm)	W (mm)	H (mm)		
ISEN600-Bi (Representative Model)	1500	53.50	45.20	14.08	13.29	600	25	2464	1134	35	156	52
ISEN595-Bi	1500	53.40	45.00	14.01	13.23	595	25	2464	1134	35	156	52
ISEN590-Bi	1500	53.30	44.80	13.94	13.18	590	25	2464	1134	35	156	52
ISEN585-Bi	1500	53.20	44.60	13.87	13.12	585	25	2464	1134	35	156	52
ISEN580-Bi	1500	53.10	44.40	13.79	13.07	580	25	2464	1134	35	156	52
ISEN575-Bi	1500	53.00	44.20	13.69	13.02	575	25	2464	1134	35	156	52
ISEN570-Bi	1500	52.90	44.00	13.60	12.96	570	25	2464	1134	35	156	52
ISEN565-Bi	1500	52.80	43.80	13.55	12.91	565	25	2464	1134	35	156	52
ISEN560-Bi	1500	52.70	43.60	13.49	12.85	560	25	2464	1134	35	156	52
ISEN555-Bi	1500	49.75	42.12	14.02	13.18	555	25	2278	1134	35	144	48
ISEN550-Bi	1500	49.60	41.97	13.98	13.11	550	25	2278	1134	35	144	48
ISEN545-Bi	1500	49.45	41.81	13.93	13.04	545	25	2278	1134	35	144	48
ISEN540-Bi	1500	49.30	41.65	13.86	12.97	540	25	2278	1134	35	144	48
ISEN535-Bi	1500	49.15	41.47	13.79	12.91	535	25	2278	1134	35	144	48
ISEN530-Bi	1500	49.00	41.32	13.72	12.83	530	25	2278	1134	35	144	48
ISEN525-Bi	1500	48.85	41.16	13.65	12.76	525	25	2278	1134	35	144	48
ISEN520-Bi	1500	48.70	41.00	13.58	12.69	520	25	2278	1134	35	144	48
ISEN505-Bi	1500	45.54	38.53	13.98	13.11	505	25	2094	1134	35	132	44
ISEN500-Bi	1500	45.39	38.38	13.93	13.04	500	25	2094	1134	35	132	44
ISEN495-Bi	1500	45.24	38.22	13.86	12.97	495	25	2094	1134	35	132	44
ISEN490-Bi	1500	45.09	38.02	13.79	12.91	490	25	2094	1134	35	132	44
ISEN485-Bi	1500	44.94	37.90	13.72	12.81	485	25	2094	1134	35	132	44
ISEN480-Bi	1500	44.75	37.78	13.65	12.71	480	25	2094	1134	35	132	44
ISEN460-Bi	1500	41.48	34.18	14.01	13.47	460	25	1908	1134	35	120	40
ISEN455-Bi	1500	41.33	34.06	13.93	13.36	455	25	1908	1134	35	120	40
ISEN450-Bi	1500	41.18	33.95	13.85	13.26	450	25	1908	1134	35	120	40
ISEN445-Bi	1500	41.10	33.84	13.79	13.16	445	25	1908	1134	35	120	40
ISEN440-Bi	1500	41.02	33.72	13.73	13.05	440	25	1908	1134	35	120	40
ISEN435-Bi	1500	40.91	33.61	13.62	12.95	435	25	1908	1134	35	120	40
ISEN430-Bi	1500	40.79	33.51	13.51	12.84	430	25	1908	1134	35	120	40
ISEN425-Bi	1500	40.75	33.46	13.46	12.71	425	25	1908	1134	35	120	40
ISEN420-Bi	1500	40.71	33.42	13.42	12.57	420	25	1908	1134	35	120	40
ISEN410-Bi	1500	37.21	31.52	13.82	13.01	410	25	1722	1134	35	108	36
ISEN405-Bi	1500	37.06	31.36	13.75	12.92	405	25	1722	1134	35	108	36
ISEN400-Bi	1500	36.91	31.20	13.68	12.83	400	25	1722	1134	35	108	36
ISEN395-Bi	1500	36.76	31.04	13.61	12.73	395	25	1722	1134	35	108	36





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Test Report No: SC24SPI01115\_1  
Dated : 16/09/2024

Page 59 of 59

ISEN390-Bi	1500	36.61	30.88	13.54	12.63	390	25	1722	1134	35	108	36
ISEN385-Bi	1500	36.46	30.72	13.47	12.54	385	25	1722	1134	35	108	36
ISEN380-Bi	1500	36.31	30.56	13.40	12.44	380	25	1722	1134	35	108	36

.....End of the report.....

