



URS PRODUCTS AND TESTING PRIVATE LIMITED

A-29, Sector-5, Noida-201301
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CIN NO U21014UP1987PTC008956



SUMMARY OF TEST REPORT

TEST REPORT NO: SC24SPI00464_1

DATE: 11/06/2024

(Total Number of Pages in Test Report: 40)

TEST FORMAT AS PER IS/IEC 61730-2:2004 (First Edition) +A1:2017

- 1. Name of the Manufacturer:** Icon Solar En Power Technologies Private Limited
- 2. Product:** Crystalline silicon terrestrial photovoltaic (PV) modules (Mono- crystalline).
- 3. Model Tested:** ISEN620N-TOP
Series Model:
156 Half cut cell family with system voltage 1500V
ISEN615N-TOP, ISEN610N-TOP, ISEN605N-TOP, ISEN600N-TOP
144 Half cut cell family with system voltage 1500V
ISEN590N-TOP, ISEN585N-TOP, ISEN580N-TOP, ISEN575N-TOP, ISEN570N-TOP, ISEN565N-TOP, ISEN560N-TOP
132 Half cut cell family with system voltage 1500V
ISEN540N-TOP, ISEN535N-TOP, ISEN530N-TOP, ISEN525N-TOP, ISEN520N-TOP
120 Half cut cell family with system voltage 1500V
ISEN500N-TOP, ISEN495N-TOP, ISEN490N-TOP, ISEN485N-TOP, ISEN480N-TOP, ISEN475N-TOP, ISEN470N-TOP,
ISEN465N-TOP, ISEN460N-TOP
108 Half cut cell family with system voltage 1500V
ISEN440N-TOP, ISEN435N-TOP, ISEN430N-TOP, ISEN425N-TOP, ISEN420N-TOP
- 4. Model differences provided (if applicable):** Yes
- 5. Model differences verified as per MNRE Guidelines for series approval:** Yes



ULR-TC646824100003980F

Discipline-Electronics Testing

Group-Miscellaneous product



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6. Test Results:

SL. NO.	TEST REQUIREMENT	CLAUSE	VERDICT
1	MST 01 – Visual inspection	10.1	P
2	MST 11 – Accessibility test	10.2	P
3	MST 12 – Cut susceptibility test	10.3	P
4	MST 13 – Ground continuity test	10.4	P
5	MST 14 – Impulse voltage test	10.5	P
6	MST 16 – Dielectric withstand test	10.6	P
7	MST 21 – Temperature test	10.7	P
8	MST 23 – Fire test	10.8	P
9	MST 25-Bypass diode thermal test	MST 25	P
10	MST 42-Robustness of terminations test	MST 42	P
11	MST 26 – Reverse current overload Test	10.9	P
12	MST 32 – Module breakage test	10.10	P
13	MST 17 – Wet leakage current test	MST 17	P
14	MST 22 – Hot-spot test	MST 22	P
15	MST 34 – Mechanical load test	MST 34	P
16	MST 51a – Thermal cycling test (TC200)	MST 51a	P
17	MST 51b – Thermal cycling test (TC50)	MST 51b	P
18	MST 52 – Humidity freeze test	MST 52	P
19	MST 53 – Damp heat test	MST 53	P
20	MST 54 – UV preconditioning test	MST 54	P
21	MST 15 – Partial discharge test	11.1	N/A
22	MST 33 – Conduit bending test	11.2	N/A
23	MST 44 –Terminal box knockout test	11.3	N/A



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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 IEC 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/IEC 61730-2:2004 (First Edition) + A1:2017

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 meets~~ all relevant requirements stated above of IS/IEC61730-2:2004 (First Edition) + A1:2017.



Date: 11/06/2024

(Signature of Authorized person with Stamp)



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TEST REPORT IS/IEC 61730-2:2004 +A1:2017 PV Module Safety Qualification Part 2: Requirements for testing	
Report Reference No.	SC24SPI00464_1
Date of issue	11/06/2024
Total number of pages	40
Testing Laboratory	URS PRODUCTS AND TESTING PRIVATE LIMITED
Address	A-29, Sector 5, Noida-201301, India
Applicant's name	Icon Solar En Power Technologies Private Limited
Address	PH. NO.09, GRAM DIGHARI MANDIR HASAUD, TEH ARANG CHHATTISGARH RAIPUR 492001
Test specification:	
Standard	IS/IEC 61730-2:2004+A1:2017
Test procedure	Compliance Report
Non-standard test method	N/A
Test Report Form No.	IS/IEC61730-2_V1.0
Test Report Form(s) Originator	BIS
Master TRF	Dated19.02.2018
Test item description	Crystalline Silicon Terrestrial Photovoltaic (PV) Modules (Si Wafer Based)
Trade Mark	
Manufacturer	Icon Solar En Power Technologies Private Limited
Address	PH. NO.09, GRAM DIGHARI MANDIR HASAUD, TEH ARANG CHHATTISGARH RAIPUR 492001
Model/Type reference	Model Tested: ISEN620N-TOP Series Model: 156 Half cut cell family with system voltage 1500V ISEN615N-TOP, ISEN610N-TOP, ISEN605N-TOP, ISEN600N-TOP 144 Half cut cell family with system voltage 1500V ISEN590N-TOP, ISEN585N-TOP, ISEN580N-TOP, ISEN575N-TOP, ISEN570N-TOP, ISEN565N-TOP, ISEN560N-TOP 132 Half cut cell family with system voltage 1500V ISEN540N-TOP, ISEN535N-TOP, ISEN530N-TOP, ISEN525N-TOP, ISEN520N-TOP 120 Half cut cell family with system voltage 1500V ISEN500N-TOP, ISEN495N-TOP, ISEN490N-TOP, ISEN485N-TOP, ISEN480N-TOP, ISEN475N-TOP, ISEN470N-TOP, ISEN465N-TOP, ISEN460N-TOP 108 Half cut cell family with system voltage 1500V ISEN440N-TOP, ISEN435N-TOP, ISEN430N-TOP, ISEN425N-TOP, ISEN420N-TOP
Ratings	See copy of Marking label and General product information.
General disclaimer	The test results presented in this report relate only to the object tested.

TRF No. IS/IEC61730-2_V1.0



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





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List of Attachments (including a total number of pages in each attachment): 30 to 32– Photographs and Specification of PV modules

Summary of testing:

Tests performed (name of test and test clause):

10.1	MST 01 – Visual inspection
10.2	MST 11 – Accessibility test
10.3	MST 12 – Cut susceptibility test
10.4	MST 13 – Ground continuity test
10.5	MST 14 – Impulse voltage test
10.6	MST 16 – Dielectric withstand test
10.7	MST 21 – Temperature test
10.8	MST 23 – Fire test
MST 25	MST 25 – Bypass diode thermal test
MST 42	MST 42 – Robustness of terminations test
10.9	MST 26 – Reverse current overload test
10.10	MST 32 – Module breakage test
MST 17	MST 17 – Wet leakage current test
MST 22	MST 22 – Hot-spot test
MST 34	MST 34 – Mechanical load test
MST 51a	MST 51a – Thermal cycling test (TC200)
MST 51b	MST 51b – Thermal cycling test (TC50)
MST 52	MST 52 – Humidity freeze test
MST 53	MST 53 – Damp heat test
MST 54	MST 54 – UV preconditioning test

Testing location:

URS PRODUCTS AND TESTING PRIVATE LIMITED
A-29, Sector 5, Noida-201301, India

The product fulfils the requirements of IS/IEC 61730-2:2004 +A1:2017





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Copy of Marking Plate

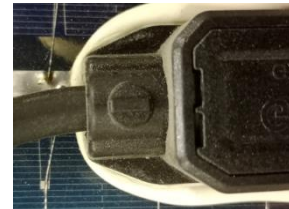
(Model Tested: ISEN620N-TOP)

 EN-ICON <small>ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.</small> Factory Address- PH No.09, Gram- Dighari, Mandir Hasaud, Teh Arang, Raipur 492001, Chhattisgarh, India Tel +91 771-4065755 <small>ELECTRICAL PARAMETER MEASURED AT STC</small>	Model No : ISEN620N-TOP Pmax (W) : 620 Wp ± 2% Voc (V) : 55.65 V Vmp (V) : 46.75 V Isc (A) : 14.06 A Imax (A) : 13.27 A	Dimension (L x W x H) : 2464 x 1134 x 35 mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire Safety Class : CLASS C	 WARNING <small>ELECTRICAL HAZARD</small> <small>www.iconsolar.com</small>
	<small>ELECTRICAL PARAMETER MEASURED AT STC</small>		

Marking inside the laminate

Polarity marking on Junction Box

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN620N-TOP
 NOMINAL WATTAGE : 620Wp ± 2% MADE IN INDIA



ICON620T1003181022


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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(Series Model: ISEN615N-TOP)



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Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India
Tel: +91 771-4065755

Model No : ISEN615N-TOP
Pmax (W) : 615 Wp ±2%
Voc (V) : 55.50 V
Vm (V) : 46.48 V
Isc (A) : 14.02 A
Imax (A) : 13.24 A

Dimension (L x W x H) : 2464 x 1134 x 35mm
System Voltage : 1500 V
Series Fuse Rating : 30 A
Application Class : CLASS A
Safety Class : CLASS II
Fire safety Class : CLASS C



WARNING
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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 : ISEN615N-TOP
NOMINAL WATTAGE: 615 Wp ± 2% MADE IN INDIA



(Series Model: ISEN610N-TOP)



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 : ISEN610N-TOP
Pmax (W) : 610 Wp ±2%
Voc (V) : 55.35 V
Vm (V) : 46.20 V
Isc (A) : 13.99 A
Imax (A) : 13.21 A

Dimension (L x W x H) : 2464 x 1134 x 35mm
System Voltage : 1500 V
Series Fuse Rating : 30 A
Application Class : CLASS A
Safety Class : CLASS II
Fire safety Class : CLASS C



WARNING
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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
YEAR OF MAKE : 2024 MODEL : ISEN610N-TOP
NOMINAL WATTAGE: 610 Wp ± 2% MADE IN INDIA



(Series Model: ISEN605N-TOP)



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 : ISEN605N-TOP
Pmax (W) : 605 Wp ±2%
Voc (V) : 55.22 V
Vm (V) : 45.92 V
Isc (A) : 13.95 A
Imax (A) : 13.18 A

Dimension (L x W x H) : 2464 x 1134 x 35mm
System Voltage : 1500 V
Series Fuse Rating : 30 A
Application Class : CLASS A
Safety Class : CLASS II
Fire safety Class : CLASS C

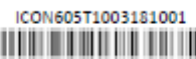


WARNING
ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
YEAR OF MAKE : 2024 MODEL : ISEN605N-TOP
NOMINAL WATTAGE: 605 Wp ± 2% MADE IN INDIA





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(Series Model: ISEN600N-TOP)



 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 : ISEN600N-TOP Pmax (W) : 600 Wp ±2% Voc (V) : 55.01V Vm (V) : 45.66 V Isc (A) : 13.91 A Imax (A) : 13.15 A	Dimension (L x W x H) : 2464 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN600N-TOP
 NOMINAL WATTAGE: 600 Wp ± 2% MADE IN INDIA

ICON600T1003181001




(Series Model: ISEN590N-TOP)



 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 : ISEN590N-TOP Pmax (W) : 590 Wp ±2% Voc (V) : 51.88 V Vm (V) : 44.05 V Isc (A) : 14.18 A Imax (A) : 13.40 A	Dimension (L x W x H) : 2278 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN590N-TOP
 NOMINAL WATTAGE: 590 Wp ± 2% MADE IN INDIA

ICON590T1003181001




(Series Model: ISEN585N-TOP)

 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 : ISEN585N-TOP Pmax (W) : 585 Wp ±2% Voc (V) : 51.74 V Vm (V) : 43.80 V Isc (A) : 14.14 A Imax (A) : 13.37 A	Dimension (L x W x H) : 2278 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN585N-TOP
 NOMINAL WATTAGE: 585 Wp ± 2% MADE IN INDIA

ICON585T1003181001






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(Series Model: ISEN580N-TOP)

 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 : ISEN580N-TOP Pmax (W) : 580 Wp ±2% Voc (V) : 51.60 V Vm (V) : 43.56 V Isc (A) : 14.10 A Imax (A) : 13.33 A	Dimension (L x W x H) : 2278 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 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 : ISEN580N-TOP
 NOMINAL WATTAGE: 580 Wp ± 2% MADE IN INDIA

ICON580T1003181001

(Series Model: ISEN575N-TOP)

 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 : ISEN575N-TOP Pmax (W) : 575 Wp ±2% Voc (V) : 51.46 V Vm (V) : 43.43 V Isc (A) : 14.06 A Imax (A) : 13.29 A	Dimension (L x W x H) : 2278 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 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 : ISEN575N-TOP
 NOMINAL WATTAGE: 575 Wp ± 2% MADE IN INDIA

ICON575T1003181001

(Series Model: ISEN570N-TOP)

 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 : ISEN570N-TOP Pmax (W) : 570 Wp ±2% Voc (V) : 51.32 V Vm (V) : 43.07 V Isc (A) : 14.02 A Imax (A) : 13.25 A	Dimension (L x W x H) : 2278 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 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 : ISEN570N-TOP
 NOMINAL WATTAGE: 570 Wp ± 2% MADE IN INDIA

ICON570T1003181001





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(Series Model: ISEN565N-TOP)

 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 : ISEN565N-TOP Pmax (W) : 565 Wp ±2% Voc (V) : 51.19 V Vm (V) : 42.82 V Isc (A) : 13.99 A Imax (A) : 13.21 A	Dimension (L x W x H) : 2278 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN565N-TOP
 NOMINAL WATTAGE: 565 Wp ± 2% MADE IN INDIA





(Series Model: ISEN560N-TOP)

 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 : ISEN560N-TOP Pmax (W) : 560 Wp ±2% Voc (V) : 51.04 V Vm (V) : 42.60 V Isc (A) : 13.95 A Imax (A) : 13.15 A	Dimension (L x W x H) : 2278 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN560N-TOP
 NOMINAL WATTAGE: 560 Wp ± 2% MADE IN INDIA



(Series Model: ISEN540N-TOP)

 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 : ISEN540N-TOP Pmax (W) : 540 Wp ±2% Voc (V) : 49.96 V Vm (V) : 40.02 V Isc (A) : 14.36 A Imax (A) : 13.50 A	Dimension (L x W x H) : 2094 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN540N-TOP
 NOMINAL WATTAGE: 540 Wp ± 2% MADE IN INDIA





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(Series Model: ISEN535N-TOP)



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 : ISEN535N-TOP
 Pmax (W) : 535 Wp \pm 2%
 Voc (V) : 49.80 V
 Vm (V) : 39.88 V
 Isc (A) : 14.32 A
 Imax (A) : 13.42 A

Dimension (L x W x H) : 2094 x 1134 x 35mm
 System Voltage : 1500 V
 Series Fuse Rating : 30 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 : ISEN535N-TOP
 NOMINAL WATTAGE: 535 Wp \pm 2% MADE IN INDIA

ICON535T1003181001



(Series Model: ISEN530N-TOP)



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 : ISEN530N-TOP
 Pmax (W) : 530 Wp \pm 2%
 Voc (V) : 46.63 V
 Vm (V) : 39.64 V
 Isc (A) : 14.27 A
 Imax (A) : 13.38 A

Dimension (L x W x H) : 2094 x 1134 x 35mm
 System Voltage : 1500 V
 Series Fuse Rating : 30 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 : ISEN530N-TOP
 NOMINAL WATTAGE: 530 Wp \pm 2% MADE IN INDIA

ICON530T1003181001



(Series Model: ISEN525N-TOP)



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 : ISEN525N-TOP
 Pmax (W) : 525 Wp \pm 2%
 Voc (V) : 46.47 V
 Vm (V) : 39.38 V
 Isc (A) : 14.23 A
 Imax (A) : 13.34 A

Dimension (L x W x H) : 2094 x 1134 x 35mm
 System Voltage : 1500 V
 Series Fuse Rating : 30 A
 Application Class : CLASS A
 Safety Class : CLASS II
 Fire safety Class : CLASS C



WARNING
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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 : ISEN525N-TOP
 NOMINAL WATTAGE: 525 Wp \pm 2% MADE IN INDIA

ICON525T1003181001





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(Series Model: ISEN520N-TOP)



 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 : ISEN520N-TOP Pmax (W) : 520 Wp ±2% Voc (V) : 46.30 V Vm (V) : 39.27 V Isc (A) : 14.19 A Imax (A) : 13.25 A	Dimension (L x W x H) : 2094 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN520N-TOP
 NOMINAL WATTAGE: 520 Wp ± 2% MADE IN INDIA

ICON520T1003181001




(Series Model: ISEN500N-TOP)



 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 : ISEN500N-TOP Pmax (W) : 500 Wp ±2% Voc (V) : 43.37 V Vm (V) : 36.42 V Isc (A) : 14.46 A Imax (A) : 13.73 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN500N-TOP
 NOMINAL WATTAGE: 500 Wp ± 2% MADE IN INDIA

ICON500T1003181001




(Series Model: ISEN495N-TOP)

 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 : ISEN495N-TOP Pmax (W) : 495 Wp ±2% Voc (V) : 43.21 V Vm (V) : 36.22 V Isc (A) : 14.40 A Imax (A) : 13.67 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN495N-TOP
 NOMINAL WATTAGE: 495 Wp ± 2% MADE IN INDIA

ICON495T1003181001






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(Series Model: ISEN490N-TOP)



 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 : ISEN490N-TOP Pmax (W) : 490 Wp ±2% Voc (V) : 43.05 V Vm (V) : 36.01 V Isc (A) : 14.34 A Imax (A) : 13.61 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN490N-TOP
 NOMINAL WATTAGE: 490 Wp ± 2% MADE IN INDIA

ICON490T1003181001

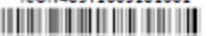


(Series Model: ISEN485N-TOP)



 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 : ISEN485N-TOP Pmax (W) : 485 Wp ±2% Voc (V) : 42.89 V Vm (V) : 35.80 V Isc (A) : 14.28 A Imax (A) : 13.55 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN485N-TOP
 NOMINAL WATTAGE: 485 Wp ± 2% MADE IN INDIA

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(Series Model: ISEN480N-TOP)

 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 : ISEN480N-TOP Pmax (W) : 480 Wp ±2% Voc (V) : 42.73 V Vm (V) : 35.59 V Isc (A) : 14.22 A Imax (A) : 13.49 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN480N-TOP
 NOMINAL WATTAGE: 480 Wp ± 2% MADE IN INDIA

ICON480T1003181001






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(Series Model: ISEN475N-TOP)



 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 : ISEN475N-TOP Pmax (W) : 475 Wp ±2% Voc (V) : 42.56 V Vm (V) : 35.37 V Isc (A) : 14.16 A Imax (A) : 13.43 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN475N-TOP
 NOMINAL WATTAGE: 475 Wp ± 2% MADE IN INDIA

ICON475T1003181001




(Series Model: ISEN470N-TOP)



 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 : ISEN470N-TOP Pmax (W) : 470 Wp ±2% Voc (V) : 42.40 V Vm (V) : 35.16 V Isc (A) : 14.11 A Imax (A) : 13.37 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN470N-TOP
 NOMINAL WATTAGE: 470 Wp ± 2% MADE IN INDIA

ICON470T1003181001




(Series Model: ISEN465N-TOP)

 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 : ISEN465N-TOP Pmax (W) : 465 Wp ±2% Voc (V) : 42.24 V Vm (V) : 34.94 V Isc (A) : 14.05 A Imax (A) : 13.31 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN465N-TOP
 NOMINAL WATTAGE: 465 Wp ± 2% MADE IN INDIA

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(Series Model: ISEN460N-TOP)



 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 : ISEN460N-TOP Pmax (W) : 460 Wp ±2% Voc (V) : 42.07 V Vm (V) : 34.72 V Isc (A) : 13.99 A Imax (A) : 13.25 A	Dimension (L x W x H) : 1908 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN460N-TOP
 NOMINAL WATTAGE: 460 Wp ± 2% MADE IN INDIA

ICON460T1003181001




(Series Model: ISEN440N-TOP)



 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 : ISEN440N-TOP Pmax (W) : 440 Wp ±2% Voc (V) : 38.63 V Vm (V) : 32.98 V Isc (A) : 14.30 A Imax (A) : 13.35 A	Dimension (L x W x H) : 1722 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN440N-TOP
 NOMINAL WATTAGE: 440 Wp ± 2% MADE IN INDIA

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(Series Model: ISEN435N-TOP)

 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 : ISEN435N-TOP Pmax (W) : 435 Wp ±2% Voc (V) : 38.50 V Vm (V) : 32.76 V Isc (A) : 14.22 A Imax (A) : 13.30 A	Dimension (L x W x H) : 1722 x 1134 x 35mm System Voltage : 1500 V Series Fuse Rating : 30 A Application Class : CLASS A Safety Class : CLASS II Fire safety Class : CLASS C	 WARNING ELECTRICAL HAZARD
	ELECTRICAL PARAMETER MEASURED AT STC		

ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN435N-TOP
 NOMINAL WATTAGE: 435 Wp ± 2% MADE IN INDIA

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(Series Model: ISEN430N-TOP)



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 Factory Address- PH No. 09, Gram-Dighari, Mandir
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Model No : ISEN430N-TOP
 Pmax (W) : 430 Wp ±2%
 Voc (V) : 38.42 V
 Vm (V) : 32.49 V
 Isc (A) : 14.13 A
 Imax (A) : 13.25 A

Dimension (L x W x H) : 1722 x 1134 x 35mm
 System Voltage : 1500 V
 Series Fuse Rating : 30 A
 Application Class : CLASS A
 Safety Class : CLASS II
 Fire safety Class : CLASS C



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 ELECTRICAL HAZARD

ELECTRICAL PARAMETER MEASURED AT STC

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ICON SOLAR-EN POWER TECHNOLOGIES PVT. LTD.
 YEAR OF MAKE : 2024 MODEL : ISEN430N-TOP
 NOMINAL WATTAGE: 430 Wp ± 2% MADE IN INDIA

ICON430T1003181001



(Series Model: ISEN425N-TOP)



Icon Solar-En Power Technologies Private Limited
 Factory Address- PH No. 09, Gram-Dighari, Mandir
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Model No : ISEN425N-TOP
 Pmax (W) : 425Wp ±2%
 Voc (V) : 38.29 V
 Vm (V) : 32.23 V
 Isc (A) : 14.05 A
 Imax (A) : 13.20 A

Dimension (L x W x H) : 1722 x 1134 x 35mm
 System Voltage : 1500 V
 Series Fuse Rating : 30 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 : ISEN425N-TOP
 NOMINAL WATTAGE: 425 Wp ± 2% MADE IN INDIA

ICON425T1003181001



(Series Model: ISEN420N-TOP)



Icon Solar-En Power Technologies Private Limited
 Factory Address- PH No. 09, Gram-Dighari, Mandir
 Hasaud, Teh - Arang, Raipur 492001, Chhattisgarh, India
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Model No : ISEN420N-TOP
 Pmax (W) : 420 Wp ±2%
 Voc (V) : 38.16 V
 Vm (V) : 31.96 V
 Isc (A) : 13.98 A
 Imax (A) : 13.15 A

Dimension (L x W x H) : 1722 x 1134 x 35mm
 System Voltage : 1500 V
 Series Fuse Rating : 30 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 : ISEN420N-TOP
 NOMINAL WATTAGE: 420 Wp ± 2% MADE IN INDIA

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Test item particulars.....	Crystalline Silicon Terrestrial Photovoltaic (PV) Modules (Si Wafer Based)
Accessories and detachable parts included in the evaluation.....	N/A
Mounting system used.....	As per Installation Manual
Other options included.....	N/A
Possible test case verdicts:	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement.....	P(Pass)
- test object does not meet the requirement.....	F(Fail)
Abbreviations used in the report:	
Pmax – Maximum power	PD – Partial Discharge
Vpm – Maximum power voltage	RTI/RTE – Relative Thermal Endurance Index
Ipm – Maximum power current	STC – Standard Test Conditions
Isc – Short circuit current	TC – Thermal Cycling
Voc – Open circuit voltage	CTI – Comparative Tracking Index
FF –Fill factor	MST – Module Safety Test
Testing.....	
Date of receipt of test item.....	30/03/2024
Date(s) of performance of tests.....	03/04/2024 to 11/06/2024

General remarks:	
"(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 [] comma/ [X] point is used as the decimal separator.	
This Test Report Form is intended for the investigation of PV modules in accordance with IS/IEC 61730-2:2004 +A1:2017. It can only be used together with IS/IEC 61730-1:2004 +A1:2017+A2:2017 Test Report.	
Name and address of factory (ies).....:	Icon Solar En Power Technologies Private Limited PH. NO.09, GRAM DIGHARI MANDIR HASAUD, TEH ARANG CHHATTISGARH RAIPUR 492001





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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.	ISEN620N-TOP (Representative Model)	1500	55.65	46.75	14.06	13.27	620	<ul style="list-style-type: none"> • Pmp • Voc • Isc • Vmp • Imp 	<ul style="list-style-type: none"> • Maximum System Voltage • Cell technology • Encapsulation • Superstrate • Module size • Backsheet/ substrate • Frame and/or mounting structure • Junction box/electrical termination • Cell interconnect materials or technique • Electrical circuit of an identical package • Power output (by 10%) in the identical package including size and using the identical cell process. • Bypass diode 	
Series Models:										
2.	ISEN615N-TOP	1500	55.50	46.48	14.02	13.24	615			
3.	ISEN610N-TOP	1500	55.35	46.20	13.99	13.21	610			
4.	ISEN605N-TOP	1500	55.22	45.92	13.95	13.18	605			
5.	ISEN600N-TOP	1500	55.01	45.66	13.91	13.15	600			
6.	ISEN590N-TOP	1500	51.88	44.05	14.18	13.40	590			
7.	ISEN585N-TOP	1500	51.74	43.80	14.14	13.37	585			
8.	ISEN580N-TOP	1500	51.60	43.56	14.10	13.33	580			
9.	ISEN575N-TOP	1500	51.46	43.43	14.06	13.29	575			
10.	ISEN570N-TOP	1500	51.32	43.07	14.02	13.25	570			
11.	ISEN565N-TOP	1500	51.19	42.82	13.99	13.21	565			
12.	ISEN560N-TOP	1500	51.04	42.60	13.95	13.15	560			
13.	ISEN540N-TOP	1500	49.96	40.02	14.36	13.50	540			
14.	ISEN535N-TOP	1500	49.80	39.88	14.32	13.42	535			
15.	ISEN530N-TOP	1500	46.63	39.64	14.27	13.38	530			
16.	ISEN525N-TOP	1500	46.47	39.38	14.23	13.34	525			
17.	ISEN520N-TOP	1500	46.30	39.27	14.19	13.25	520			
18.	ISEN500N-TOP	1500	43.37	36.42	14.46	13.73	500			
19.	ISEN495N-TOP	1500	43.21	36.22	14.40	13.67	495			
20.	ISEN490N-TOP	1500	43.05	36.01	14.34	13.61	490			
21.	ISEN485N-TOP	1500	42.89	35.80	14.28	13.55	485			
22.	ISEN480N-TOP	1500	42.73	35.59	14.22	13.49	480			
23.	ISEN475N-TOP	1500	42.56	35.37	14.16	13.43	475			
24.	ISEN470N-TOP	1500	42.40	35.16	14.11	13.37	470			
25.	ISEN465N-TOP	1500	42.24	34.94	14.05	13.31	465			
26.	ISEN460N-TOP	1500	42.07	34.72	13.99	13.25	460			
27.	ISEN440N-TOP	1500	38.63	32.98	14.30	13.35	440			
28.	ISEN435N-TOP	1500	38.50	32.76	14.22	13.30	435			
29.	ISEN430N-TOP	1500	38.42	32.49	14.13	13.25	430			
30.	ISEN425N-TOP	1500	38.29	32.23	14.05	13.20	425			
31.	ISEN420N-TOP	1500	38.16	31.96	13.98	13.15	420			





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General Product Information:

PV module type reference.....: ISEN620N-TOP

Product Electrical Ratings at STC

Nominal maximum power (Pmax).....: 620W
Nominal open circuit voltage at (Voc).....: 55.65V
Nominal short circuit current at (Isc).....: 14.06A
Nominal maximum power voltage (Vpm).....: 46.75V
Nominal maximum power current (Ipm).....: 13.27A

Product Safety Ratings

Maximum system voltage.....: 1500V
Maximum over-current protection rating.....: 30A
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.....:
156 half cut cells family: 26 no.
144 half cut cells family: 27 no.
132 half cut cells family: 29 no.
120 half cut cells family: 32 no.
108 half cut cells family: 36 no.

Scope of Module Safety Qualification Testing:

Initial module safety qualification
 Extension of module safety qualification
original test report ref. no.....: N/A
Model differences and modification:
 Change in cell technology
 Modification to encapsulation system
 Modification to superstrate
 Modification to backsheet/substrate
 Modification to frame/mounting structure
 Removal of frame
 Change in cell interconnect materials/technique
 Modification to junction box/el. Termination
 Change in el. circuit of an identical package
 Higher or lower output by 10 %
 Increase in module size

- Note (1)** Use the "General product information" field to give any information on model differences within a product type family covered by the test report.
- Note (2)** Use the "General product information" field to describe the range of electrical and safety ratings, if the TRF covers a type family of modules.
- Note (3)** Use Annex 1 to list the used materials and components of the module (manufacturer/supplier and type reference)





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Clause	Requirement + Test	Result – Remark	Verdict
3	Application Classes		P
	The module has been evaluated for the following Application Class (Class A, B, C).....:	Class A	P
6	Sampling		P
	[X] The modules tested (modules and laminate) were taken at random from a production batch and subjected to manufacturer’s normal quality control and inspection for safety testing.	-	P
	[] The modules tested (modules and laminate) were prototypes of a new design and not taken from a production batch.	-	N/A
	[X] Preconditioning of test samples was performed within IS 14286 (2010) or IS 16077:2013/IEC 61646:2008 performance testing.	-	P
	[] Preconditioning of test samples was performed separately from IS 14286 (2010) or IS 16077:2013/IEC 61646:2008 performance testing.	-	N/A

List of test samples		
Sample No.	Type / model	Remark Serial number
Full Testing		
9	ISEN620N-TOP	ICON620T1003181022
10		ICON620T1003181018
11		ICON620T1003181021
12		ICON620T1003181017
13		ICON620T1003181023
14		ICON620T1003181024
15		ICON620T1003181025
16		ICON620T1003181027
17		ICON620T1003181028
18		ICON620T1003181029
Supplementary information: NIL		





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Clause	Requirement + Test	Result – Remark	Verdict
9	Pass Criteria		P
	The module under evaluation was judged to have passed all safety qualification test. The test samples met all of the criteria of each individual safety test.	See appended tables	P
Supplementary information: NIL			

10	Test Procedures		P
Safety qualification testing includes the following Module Safety Tests (MST) of IS/IEC 61730-2			
10.1	MST 01 - Visual inspection.....:	see table 10.1	P
10.2	MST 11 - Accessibility test.....:	see table 10.2	P
10.3	MST 12 - Cut susceptibility test.....:	see table 10.3	P
10.4	MST 13 - Ground continuity test.....:	see table 10.4	P
10.5	MST 14 - Impulse voltage test.....:	see table 10.5	P
10.6	MST 16 - Dielectric withstand test.....:	see table 10.6	P
10.7	MST 21 - Temperature test.....:	see table 10.7	P
10.8	MST 23 - Fire test.....:	see table 10.8	P
MST 25	MST 25 - Bypass diode thermal test.....:	See table A2.9	P
MST 42	MST 42 - Robustness of terminations test.....:	See table A2.4	P
10.9	MST 26 - Reverse current overload Test.....:	see table 10.9	P
10.10	MST 32 - Module breakage test.....:	see table 10.10	P
MST 17	MST 17 - Wet leakage current test.....:	see table MST 17	P
MST 22	MST 22 - Hot-spot test.....:	see table A 2.10	P
MST 34	MST 34 - Mechanical load test.....:	see table A 2.7	P
MST 51a	MST 51a - Thermal cycling test (TC200).....:	see table A 2.8	P
MST 51b	MST 51b - Thermal cycling test (TC50).....:	see table A 2.2	P
MST 52	MST 52 - Humidity freeze test.....:	see table A 2.3	P
MST 53	MST 53 - Damp heat test.....:	see table A 2.5	P
MST 54	MST 54 - UV preconditioning test.....:	see table A 2.1	P
Component tests:			
11.1	MST 15 - Partial discharge test.....:	see table 11.1	N/A
11.2	MST 33 - Conduit bending test.....:	see table 11.2	N/A
11.3	MST 44 - Terminal box knockout test.....:	see table 11.3	N/A
Supplementary information: NIL			





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Clause	Requirement + Test	Result – Remark	Verdict
--------	--------------------	-----------------	---------

10.1	TABLE: Visual Inspection - MST 01 (Initial)		P
Sample No.	Nature and position of findings		-
09	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
15	No visual defect		P
16	No visual defect		P
17	No visual defect		P
18	No visual defect		P

Supplementary information: NIL

10.2	TABLE: Accessibility Test - MST 11 (Initial)		P
	Maximum system voltage [V _{DC}].....:	1500	-
Sample No.	Result [MΩ]		-
10	Resistance between the test fixture and the electrical circuit of module is > 1MΩ		P
11	Resistance between the test fixture and the electrical circuit of module is > 1MΩ		P
12	Resistance between the test fixture and the electrical circuit of module is > 1MΩ		P
13	Resistance between the test fixture and the electrical circuit of module is > 1MΩ		P

Supplementary information: NIL

10.4	TABLE: Ground Continuity Test - MST 13 (Initial)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Current applied [A].....:	75	-
	Location of designated grounding point.....:	Ground holes on the sides of the frame	-
	Location of second contacting point.....:	Greatest physical displacement from the grounding point.	-
Sample No.	Voltage [V _{DC}]	Resistance [mΩ]	-
10	0.43	5.733	P
11	0.37	4.933	P
12	0.34	4.533	P
13	0.42	5.600	P

Supplementary information: NIL





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Clause	Requirement + Test	Result – Remark	Verdict
10.6	TABLE: Dielectric Withstand Test - MST 16 (Initial)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000 for 1min/1500 for 2min	-
	Module area A [m ²].....:	2.794	-
Sample No.	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance x A [MΩ.m ²] [#]
10	[X]	11.61	40
11	[X]	11.28	40
12	[X]	11.75	40
13	[X]	11.67	40
Supplementary information: [X]: No breakdown occurred. ; #: Limit			

MST 17	TABLE: Wet Leakage Current Test - MST 17 (Initial)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Test voltage applied V _{TEST} [V _{DC}].....:	1500	-
	Module area A [m ²].....:	2.794	-
	Resistivity of wetting agent [Ω.cm].....:	2513	-
	Average wetting agent temperature [°C].....:	23.0	-
Sample No.	Insulation resistance at V _{TEST} [GΩ]		Insulation resistance x A [MΩ.m ²] [#]
10	4.39		40
11	5.14		40
12	4.87		40
13	4.98		40
Supplementary information: #: Limit			

10.3	TABLE: Cut Susceptibility Test - MST 12		P
	Applied force [N].....:	8.9 ± 0.5	-
Sample No.			-
10	[X] No exposure of active circuitry of the module		P
11	[X] No exposure of active circuitry of the module		P
Supplementary information: NIL			

10.1	TABLE: Visual Inspection - MST 01 (after Cut Susceptibility Test)		P
Sample No.	Nature and position of findings		-
10	No Visual defects		P
11	No Visual defects		P
Supplementary information: NIL			





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Clause	Requirement + Test	Result – Remark	Verdict
10.6	TABLE: Dielectric Withstand Test - MST 16 (after Cut Susceptibility Test)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000V for 1min/1500V for 2min	-
	Module area A [m ²].....:	2.794	-
Sample No.	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance x A [MΩ.m ²] [#]
10	[X]	6.90	40
11	[X]	8.85	40

Supplementary information: [X]: No breakdown occurred. ; # : Limit.

MST 17	TABLE: Wet Leakage Current Test - MST 17 (after Cut Susceptibility Test)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Test voltage applied V _{TEST} [V _{DC}].....:	1500	-
	Module area A [m ²].....:	2.794	-
	Resistivity of wetting agent [Ω.cm].....:	2512	-
	Average wetting agent temperature [°C].....:	24.0	-
Sample No.	Insulation resistance at V _{TEST} [GΩ]		Insulation resistance x A [MΩ.m ²] [#]
10	3.27		40
11	2.94		40

Supplementary information: # - Limit.

10.2	TABLE: Accessibility test - MST 11		P
	Maximum system voltage [V _{DC}].....:	1500	-
Sample No.	Nature and position of findings		-
10	Resistance between the test fixture and the electrical circuit of module is > 1MΩ		P
11	Resistance between the test fixture and the electrical circuit of module is > 1MΩ		P

Supplementary information: NIL

10.4	TABLE: Ground Continuity Test - MST 13		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Current applied [A].....:	75	-
	Location of designated grounding point.....:	Ground holes on the sides of the frame	-
	Location of second contacting point.....:	Greatest physical displacement from the grounding point.	-
Sample No.	Voltage [V _{DC}]	Resistance [mΩ]	-
10	0.38	5.067	P
11	0.44	5.867	P

Supplementary information: NIL





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10.5	TABLE: Impulse Voltage Test - MST 14			P
	Maximum system voltage [V _{DC}].....:	1500		-
	Impulse voltage [V].....:	16000		-
	Thickness of conductive foil [mm].....:	0.05		-
Sample No.				-
13	No dielectric breakdown or surface tracking			P
Supplementary information: NIL				
10.1	TABLE: Visual Inspection - MST 01 (after Impulse Voltage Test)			P
Sample No.	Nature and position of findings			-
13	No visual defect			P
Supplementary information: NIL				
10.6	TABLE: Dielectric Withstand Test - MST 16 (after Impulse Voltage Test)			P
	Maximum system voltage [V _{DC}].....:	1500		-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000V for 1min/1500 V for 2min		-
	Module area A [m ²].....:	2.794		-
Sample No.	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance x A [MΩ.m ²] [#]	-
13	[X]	9.94	40	P
Supplementary information: [X]: No breakdown occurred. ; # - Limit.				





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10.7	TABLE: Temperature Test - MST 21				P
	Sample No.:	15			-
	Reference solar irradiance [W/m ²].....:	1000			-
	Reference ambient temperature [°C].....:	40			-
Measuring location	Component temperature T _{OBS} [°C]	Normalised temperature T _{CON} [°C]	Component temperature limit [°C]		-
Module open-circuited					
Module superstrate above the centre cell	70.45	79.35	Not specified		-
Module substrate below the centre cell	73.81	82.71	120		-
Terminal enclosure interior surface	63.33	72.23	85		P
Terminal enclosure interior air space	62.72	71.62	85		P
Field wiring terminals	63.15	72.05	90		P
Insulation of the field wiring leads	59.46	68.36	90		P
External connector bodies	64.12	73.02	85		P
Diode D1	59.19	68.09	200		P
Diode D2	59.05	67.95	200		P
Diode D3	58.97	67.87	200		P
Module short-circuit					
Module superstrate above the centre cell	78.67	86.87	Not specified		-
Module substrate below the centre cell	78.49	86.69	120		-
Terminal enclosure interior surface	67.28	75.48	85		P
Terminal enclosure interior air space	65.83	74.03	85		P
Field wiring terminals	66.35	74.55	90		P
Insulation of the field wiring leads	61.22	69.42	90		P
External connector bodies	59.54	67.74	85		P
Diode D1	75.65	83.85	200		P
Diode D2	75.81	84.01	200		P
Diode D3	75.32	83.52	200		P
Supplementary information: T _{CON} = T _{OBS} + (40 °C - T _{AMB}), temperature limits are given in Table 9 of IS/IEC 61730-2.					

10.8	TABLE: Fire Test - MST 23			P	
	Module fire resistance class (A, B, C).....:	Class C			-
	No. of modules provided to create the test assembly.....:	3			-
Sample No.					-
16#	[X] Modules comply with the requirements for the fire resistance class				P
17#					P
18*					P
Supplementary information: # - Spread of flame, * - Brand					





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10.9	TABLE: Reverse Current Overload Test - MST 26		P
	Module over-current protection rating [A].....:	30	-
	Test current [A].....:	40.5	-
	Range of applied voltage [V].....:	49.52-52.38	-
	Test duration.....:	2 hours	-
Sample No.			-
15	<input checked="" type="checkbox"/> No flaming of the module <input checked="" type="checkbox"/> No flaming or charring of the cheesecloth <input checked="" type="checkbox"/> No flaming of the tissue paper		P

Supplementary information: Nil

MST 17	TABLE: Wet Leakage Current Test - MST 17 (after Reverse Current Overload Test)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Test voltage applied V _{TEST} [V _{DC}].....:	1500	-
	Module area A [m ²].....:	2.794	-
	Resistivity of wetting agent [Ω.cm].....:	2514	-
	Average wetting agent temperature [°C].....:	23.1	-
Sample No.	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance x A [MΩ.m ²] [#]	-
15	2.64	40	P

Supplementary information: # : Limit

	TABLE: Module Breakage Test - MST 32		P
	Weight of impactor [kg].....:	45.5	-
	Thickness of sample [mm].....:	5.3	-
	Mounting technique used.....:	As instructed in manual	-
	Module breakage.....:	<input type="checkbox"/> No breakage <input type="checkbox"/> Breakage at 300 mm <input type="checkbox"/> Breakage at 450 mm <input checked="" type="checkbox"/> Breakage at 1220 mm	-
	Weight of particles in case of breakage [g].....:	No particle ejected from the sample	-
Sample No.			-
14	<input type="checkbox"/> Breakage occurred, but no shear or opening large enough for a 76 mm diameter sphere to pass freely has developed.		N/A
	<input type="checkbox"/> Disintegration occurred, but the ten largest crack-free particles selected 5 min subsequent to the test did not weigh more in grams than 16 times the thickness of the sample in millimetres.		N/A
	<input checked="" type="checkbox"/> Breakage occurred, but no particles larger than 6.5 cm ² have been ejected from the sample.		P

Supplementary information: NIL

11	Component Tests		N/A
	MST 15 - Partial discharge test.....:	Cerified component used	N/A
	MST 33 - Conduit bending test.....:	No such construction	N/A
	MST 44 - Terminal box knockout test.....:	No such construction	N/A





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11.1	TABLE: Partial Discharge Test - MST 15		N/A
	Manufacturer.....:	-	-
	Type reference.....:		-
	Materials and thicknesses.....:		-
	Ambient temperature [°C].....:		-
	Relative humidity [%].....:		-
	Test medium (air/oil).....:		
	Sample No.	PD inception voltage, U _i [V]	PD extinction voltage, U _e [V]
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	Mean value of PD extinction voltage, \bar{U}_e , avg [V]	-	-
	Standard deviation of PD extinction voltage, σ [V]..... :	-	-
	Mean value minus standard deviation of PD extinction voltage [V]	-	-
	Resulting maximum system voltage, U _{SYS} [V]..... :	-	-

Supplementary information: Certified component used
 Calculation of maximum system voltage:
 Safety factor $F_1 = 1.2$ (Basic safety factor)
 $F_2 = 1$ (Hysteresis factor)
 $F_3 = 1.25$ (Additional safety factor: reinforced insulation)
 Allowable maximum system voltage: $U_{SYS} = 2 \times (U_{e,avg} - \sigma) / (F_1 \times F_2 \times F_3) V_{DC}$

11.2	TABLE: Bending Test - MST 33		N/A
	Manufacturer and type reference of conduit.....:		-
	Trade size of conduit [mm].....:		-
	Distance between the ends of the conduit in the box		-
	Distance between supports.....:		-
	Force load in accordance with Table 10 of IS/IEC 61730-2 [N].....:		-
	Sample No.		-
		[] No rupture of the attachment walls of the junction box	
		[] No separation of junction box from the conduit	

Supplementary information: No such construction
 Distance between supports = 760 mm + Distance between the ends of the conduit in the box





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Clause	Requirement + Test	Result – Remark	Verdict
11.3	TABLE: Terminal Box Knockout Test - MST 44		N/A
	Manufacturer of terminal box.....:		-
	Type reference.....:		-
	Number of knockouts in the junction box.....:		-
	Force applied to knockout [N].....:	44.5	-
Knockout No.			-
	<input type="checkbox"/> The knockout remains in place		
	<input type="checkbox"/> The clearance between knockout and opening is < 0.75 mm		
	<input type="checkbox"/> The knockout remains in place		
	<input type="checkbox"/> The clearance between knockout and opening is < 0.75 mm		
	<input type="checkbox"/> The knockout remains in place		
	<input type="checkbox"/> The clearance between knockout and opening is < 0.75 mm		
	<input type="checkbox"/> The knockout remains in place		
	<input type="checkbox"/> The clearance between knockout and opening is < 0.75 mm		
Supplementary information: No such construction			





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ANNEX 1: PRODUCT DESCRIPTION SHEET (MANUFACTURERS AND TYPE REFERENCES)

A1.1	MODULE TYPE/S	
	Model Tested: ISEN620N-TOP	
A1.2	MODULE DESIGN –DIMENSIONS	
	Module dimensions (L x W x H) [mm].....:	2464mm*1134mm*35mm (for 156 half cut cells family) 2278mm*1134mm*35mm (for 144 half cut cells family) 2094mm*1134mm*35mm (for 132 half cut cells family) 1908mm*1134mm*35mm (for 120 half cut cells family) 1722mm*1134mm*35mm (for 108 half cut cells family)
A1.3	SOLAR CELL	
	Cell type reference.....:	182M-10D11, N-type TOPCon Manufactured by JIETAI NEW ENERGY TECHNOLOGY CO., LTD.
	Cell dimensions L x W x T (± %) [mm].....:	91mmX182mm±0.5mm
	Cell thickness [µm].....:	130µm±13µm
	Cell area [cm ²].....:	165.62
A1.4	IDENTIFICATION OF MATERIALS	
	Front cover.....:	AR coating tempered glass, Thickness: 3.20mm, Manufactured by BOROSIL RENEWABLES LIMITED
	Rear cover.....:	PRESERV 1-300 TF, Thickness: 360µm, Manufactured by RENEWSYS INDIA PVT. LTD. Partial discharge: Project no.: 4789424469 tested by UL INDIA PVT LTD
	Encapsulation material.....:	CONCERVE 360, Thickness: 0.45-0.65±5% Manufactured by RENEWSYS INDIA PVT. LTD.
	Frame parts.....:	Alloy 6063 T6, 35mm*35mm Manufactured by: ALOM EXTRUSION LTD.
	Mounting parts.....:	As per installation manual
	Adhesive for frame.....:	Fasto SM30, RTV Silicone adhesive, Manufactured by: FASTO ADVANCE MATERIALS INDIA PVT. LTD.
	Cell connector.....:	Sn60/Pb40, 0.32mm, GEBA CABLES & WIRES INDIA PRIVATE LIMITED
	String connector.....:	Sn60/Pb40, 6x0.4(mm) & 4x0.4(mm), GEBA CABLES & WIRES INDIA PRIVATE LIMITED
	Fluxing agent.....:	952-S, Manufactured by: KESTER
	Junction box.....:	GXSB-01, Rated Voltage: 1500 V d.c., -40 to +85°C, IP 68, Manufactured by: GENX PV INDIA PRIVATE LIMITED. Certificate number B 115777 0002 Rev.-00 Tested by TUV SUD PRODUCT SERVICE GMBH
	Cable.....:	BIRLA UNISTAR 1Cx4.0 mm ² , Rated voltage: 1.8kv DC, Manufactured by: VINDHYA TELELINK LTD. Tested as per IS 17293: 2020 with CM/L no.: 8200162706
	Connector.....:	GXCO1, Rated Voltage: 1500V DC, Rated Current: 40A, -40 to +85°C, IP68,





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		Manufactured by: GENX PV INDIA PRIVATE LIMITED. Certificate No. B 115777 0001 Rev. 00 Tested by TUV SUD PRODUCT SERVICE GMBH.
	Bypass diode.....:	Type: MK6045; VRRM: 45V, IF(AV) : 60A, RθJC : 1.2, Tj : +200°C Manufactured by: Genx PV India Private Limited
	Potting material.....:	Fasto SP70, Silicone adhesive, Manufactured by: FASTO ADVANCE MATERIALS INDIA PVT. LTD.
	Adhesive for junction box.....:	Fasto SM30, RTV Silicone adhesive, Manufactured by: FASTO ADVANCE MATERIALS INDIA PVT. LTD.
	Additional material (e. g. fixing tape, insulation tape)....:	

A1.5	MODULE DESIGN - MINIMUM DISTANCES	
	Between cells (mm).....:	1.4mm
	Between cell and edge of laminate (mm).....:	13.5mm
	Between any current carrying part and edge of laminate (mm)....:	14mm

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





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ANNEX 2

Preconditioning Tests		P
MST 51 - Thermal cycling (TC50 MST 51b).....:	See table A2.2	P
MST 51 - Thermal cycling (TC200 MST 51a).....:	See table A2.8	P
MST 52 - Humidity freeze (HF10 MST 52).....:	See table A2.3	P
MST 53 - Damp heat (DH 1000 MST 53).....:	See table A2.5	P
MST 54 - UV preconditioning test (MST 54).....:	See table A2.1	P

Electrical shock hazard tests		P
MST 17 - Wet leakage test (MST 17).....:	See table A2.6	P
MST 42 - Robustness of terminal test (MST 42).....:	See table A2.4	P

Fire hazard tests		P
MST 22 - Hot - spot test (MST 17).....:	See table A2.10	P
MST 25 - Bypass diode thermal test (MST 25).....:	See table A2.9	P

Mechanical stress tests		P
MST 34 - Mechanical load test (MST 34).....:	See table A2.7	P

A2.1	TABLE: UV preconditioning test MST 54		P
Test Date [MM/DD/YYYY] start/end.....:	04/10/2024 to 04/18/2024		-
Module temperature [°C].....:	60 ± 5		-
Irradiation 280 - 400 nm [kWh/m ²] UV - A	15.0		-
Irradiation 280 - 320 nm [kWh/m ²] UV - B	5.0		-
Sample No.:	Open circuits (yes/no)		-
10	No open circuit found		P

Supplementary information: NIL

A2.1	TABLE: Visual Inspection MST 01 (after UV preconditioning test MST 54)		P
Sample No.:	Nature and position of findings		-
10	No visual defect		P

Supplementary information: NIL

A2.1	TABLE: Dielectric withstand test - MST 16 (after UV preconditioning test MST 54)			P
	Maximum system voltage [V _{DC}].....:	1500		-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000V for 1min/1500 V for 2min		-
	Module area A [m ²].....:	2.794		-
Sample No.:	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance X A [MΩ.m ²] #	-
10	[X]	10.42	40	P

Supplementary information: [X]: No breakdown occurred. ; #: Limit





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Clause	Requirement + Test	Result – Remark	Verdict
A2.2	TABLE: Thermal cycling 50 test MST 51b		P
	Test Date [MM/DD/YYYY] start/end.....:	04/19/2024 to 05/03/2024	-
	Total cycles (50).....:	50	-
Sample No.:	Open circuits (yes/no)		-
10	No		P
Supplementary information: NIL			
A2.2	TABLE: Visual Inspection MST 01 (after Thermal cycling 50 test MST 51b)		P
Sample No.:	Nature and position of findings		-
10	No visual defect		P
Supplementary information: NIL			
A2.2	TABLE: Dielectric withstand test - MST 16 (after Thermal cycling 50 test MST 51b)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000 V for 1min/1500 V for 2min	-
	Module area A [m ²].....:	2.794	-
Sample No.:	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance X A [MΩ.m ²] #
10	[X]	9.27	40
Supplementary information: [X]: No breakdown occurred.; #: Limit			

A2.3	TABLE: Humidity freeze test MST 52		P
	Test Date [MM/DD/YYYY] start/end.....:	05/06/2024 to 05/17/2024	-
	Total cycles (10).....:	10	-
Sample No.:	Open circuits (yes/no)		-
10	No		P
Supplementary information: NIL			
A2.3	TABLE: Visual Inspection MST 01 (after Humidity freeze test MST 52)		P
Sample No.:	Nature and position of findings		-
10	No visual defect		P
Supplementary information: NIL			
A2.3	TABLE: Dielectric withstand test - MST 16 (after Humidity freeze test MST 52)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000V for 1min/1500 V for 2min	-
	Module area A [m ²].....:	2.794	-
Sample No.:	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance X A [MΩ.m ²] #
10	[X]	8.13	40
Supplementary information: [X]: No breakdown occurred.; #: Limit			





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Clause	Requirement + Test	Result – Remark	Verdict
A2.4	TABLE: Robustness of terminations test MST 42		P
Test Date [MM/DD/YYYY] start/end.....:	05/20/2024		-
Types of terminations.....:	[X] Type A: wire of flying lead [] Type B: tags, threaded stubs, screws, etc. [] Type C: connector		-
Applied force in all directions [N].....:	40 for tensile test, 20 for bending test		-
Sample No.:	Open circuits (yes/no)		-
10	No		P
Supplementary information: NIL			

A2.4	TABLE: Visual Inspection MST 01 (after Robustness of terminations test MST 42)		P
Sample No.:	Nature and position of findings		-
10	No visual defect		P
Supplementary information: NIL			

A2.4	TABLE: Dielectric withstand test - MST 16 (after Robustness of terminations test MST 42)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000V for 1min/1500 V for 2min	-
	Module area A [m ²].....:	2.794	-
Sample No.:	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance X A [MΩ.m ²] #
10	[X]	7.74	40
Supplementary information: [X]: No breakdown occurred. ; #: Limit			

A2.5	TABLE: Damp heat test MST 53		P
Test Date [MM/DD/YYYY] start/end.....:	04/10/2024 to 05/23/2024		-
Total hours (1000).....:	1000		-
Sample No.:	Open circuits (yes/no)		-
11	No		P
Supplementary information: NIL			

A2.5	TABLE: Visual Inspection MST 01 (after Damp heat test MST 53)		P
Sample No.:	Nature and position of findings		-
11	No visual defect		P
Supplementary information: NIL			

A2.5	TABLE: Dielectric withstand test - MST 16 (after Damp heat test MST 53)		P
	Maximum system voltage [V _{DC}].....:	1500	-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000V for 1min/1500 V for 2min	-
	Module area A [m ²].....:	2.794	-
Sample No.:	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance X A [MΩ.m ²] #
11	[X]	10.08	40
Supplementary information: [X]: No breakdown occurred. ; #: Limit			





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Clause	Requirement + Test	Result – Remark	Verdict
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A2.6 TABLE: Wet leakage current test MST 17			P
Test Date [MM/DD/YYYY] start/end.....:	05/23/2024		-
Test voltage applied [V].....:	1500		-
Solution resistivity [Ω cm].....:	< 3500 Ω cm at 22 \pm 3°C	2497	-
Surface tension [Nm^{-1}].....:	< 0.03 Nm^{-1} at 22 \pm 3°C	-	-
Solution temperature [°C].....:	23.2		-
Sample No.:	Measured [$\text{G}\Omega$]	Insulation resistance X A [$\text{M}\Omega\cdot\text{m}^2$] #	-
11	4.35	40	P
Supplementary information: Size of module 2.794 [m^2]. ; #: Limit			

A2.7 TABLE: Mechanical load test MST 34			P
Sample No.:	11		-
Test Date [MM/DD/YYYY].....:	06/10/2024		-
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).....:	10:15 to 11:15	11:35 to 12:35	-
Intermittent open - circuit (yes/no).....:	No	No	-
Mechanical load [Pa].....:	2400	2400	-
Second cycle time (start/end).....:	12:50 to 01:50	02:15 to 03:15	-
Intermittent open - circuit (yes/no).....:	No	No	-
Mechanical load [Pa].....:	5400	2400	-
Third cycle time (start/end).....:	03:35 to 04:35	04:55 to 5:55	-
Intermittent open - circuit (yes/no).....:	No	No	-
Supplementary information: NIL			

A2.7 TABLE: Visual Inspection MST 01 (after Mechanical load test MST 34)			P
Sample No.:	Nature and position of findings		-
11	No visual defect		P
Supplementary information: NIL			

A2.7 TABLE: Wet leakage current test MST 17 (after Mechanical load test MST 34)			P
Test Date [MM/DD/YYYY] start/end.....:	06/10/2024		-
Test voltage applied [V].....:	1500		-
Solution resistivity [Ω .cm].....:	< 3500 Ω cm at 22 \pm 3°C	2497	-
Surface tension [Nm^{-1}].....:	< 0.03 Nm^{-1} at 22 \pm 3°C	-	-
Solution temperature [°C].....:	24.0		-
Sample No.:	Measured [$\text{G}\Omega$]	Insulation resistance X A [$\text{M}\Omega\cdot\text{m}^2$] #	-
11	3.46	40	P
Supplementary information: Size of module 2.794 [m^2]. ; #: Limit			





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A2.8	TABLE: Thermal cycling test MST 51a			P
Test Date [MM/DD/YYYY] start/end.....:	04/10/2024 to 05/25/2024			-
Total hours (200).....:	200			-
Applied current [A].....:	13.27			-
Sample No.:	Open circuits (yes/no)			-
12	No			P

Supplementary information: NIL

A2.8	TABLE: Visual Inspection MST 01 (after Thermal cycling test MST 51a)			P
Sample No.:	Nature and position of findings			-
12	No visual defect			P

Supplementary information: NIL

A2.8	TABLE: Dielectric withstand test - MST 16 (after Thermal cycling test MST 51a)			P
Maximum system voltage [V _{DC}].....:	1500			-
Test voltage applied V _{TEST} [V _{DC}].....:	8000V for 1min/1500 V for 2min			-
Module area A [m ²].....:	2.794			-
Sample No.:	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance X A [MΩ.m ²] #	-
12	[X]	10.81	40	P

Supplementary information: [X]: No breakdown occurred. ; #: Limit

A2.9	TABLE: Dielectric withstand test - MST 16 (Before Bypass diode thermal test MST 25)			P
Maximum system voltage [V _{DC}].....:	1500			-
Test voltage applied V _{TEST} [V _{DC}].....:	8000V for 1min/1500V for 2min			-
Module area A [m ²].....:	2.794			-
Sample No.:	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance X A [MΩ.m ²] #	-
15	[X]	11.85	40	P

Supplementary information: [X]: No breakdown occurred. ; #: Limit





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A2.9	TABLE: Bypass diode thermal test MST 25			P
Sample No.:	15			-
Test Date [MM/DD/YYYY] start/end.....:	04/08/2024			-
Module temperature [°C].....:	75±5			-
Number of diodes in junction box.....:	3			-
Diode manufacturer.....:	Genx PV India Private Limited			-
Diode type designation.....:	MK6045			-
Max. permissible junction temperature Tjmax [°C] (According to diode datasheet).....:	200			-
	Diode 1	Diode 2	Diode 3	-
Current flow applied [A].....:	14.06	14.06	14.06	-
Max. diode surface temperature [°C] a or b.....:	145.3	145.9	145.7	-
Voltage drop [V].....:	0.33	0.37	0.39	-
Power dissipation [W].....:	4.64	5.20	5.48	-
Thermal resistance junction to leads (RTHJL)/to case (RTHJC) [K/W] (according to datasheet).....:	1.2	1.2	1.2	-
Calculated max. junction temperature Tjcalc [°C] a or b.....:	150.87	152.14	152.28	-
Tjcalc < Tjmax (test passed)? yes/no.....:	Yes	Yes	Yes	P
Current flow (1.25*Isc) [A].....:	17.58	17.58	17.58	-
Max. diode surface temperature [°C] a or b.....:	154.23	155.79	155.86	P
Supplementary information: NIL				
A2.9	TABLE: Visual Inspection MST 01 (after Bypass diode thermal test MST 25)			P
Sample No.:	Nature and position of findings			-
15	No visual defect			P
Supplementary information: NIL				
A2.9	TABLE: Dielectric withstand test - MST 16 (after Bypass diode thermal test MST 25)			P
	Maximum system voltage [V _{DC}].....:	1500		-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000V for 1min/1500V for 2min		-
	Module area A [m ²].....:	2.794		-
Sample No.:	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance X A [MΩ.m ²] #	-
15	[X]	10.98	40	P
Supplementary information: [X]: No breakdown occurred. ; #: Limit				
A2.9	TABLE: Wet leakage current test MST 17 (after Bypass diode thermal test MST 25)			P
	Test Date [MM/DD/YYYY] start/end.....:	04/08/2024		-
	Test voltage applied [V].....:	1500		-
	Solution resistivity [Ω cm].....:	< 3500 Ωcm at 22 ± 3°C	2493	-
	Surface tension [Nm ⁻¹].....:	< 0.03 Nm ⁻¹ at 22 ± 3°C	-	-
	Solution temperature [°C].....:	24.1		-
Sample No.:	Measured [GΩ]	Insulation resistance X A [MΩ.m ²] #		-
15	4.16	40		P
Supplementary information: Size of module 2.794 [m ²]. ; #: Limit				





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A2.10	TABLE: Hot-spot endurance test MST 22			P
Sample No.:	15			-
Test Date [MM/DD/YYYY] start/end.....:	04/09/2024 to 04/11/2024			-
Cell interconnection circuit.....:	[] S	[X] SP	[] SPS	-
Module temperature at thermal equilibrium [°C].....:	53.1			-
Determination of worse case cell				-
Maximum measured cell temperature in 5 hours [°C]	78.5			-
Shading rate [%]	100			-
Supplementary information: NIL				

A2.10	TABLE: Visual Inspection MST 01 (after Hot-spot endurance test MST 22)			P
Sample No.:	Nature and position of findings			-
15	No visual defect			P
Supplementary information: NIL				

A2.10	TABLE: Dielectric withstand test - MST 16 (after Hot-spot endurance test MST 22)			P
	Maximum system voltage [V _{DC}].....:	1500		-
	Test voltage applied V _{TEST} [V _{DC}].....:	8000 for 1min/1500V for 2min		-
	Module area A [m ²].....:	2.794		-
Sample No.:	Dielectric breakdown	Insulation resistance at V _{TEST} [GΩ]	Insulation resistance X A [MΩ.m ²] #	-
15	[X]	9.88	40	P
Supplementary information: [X]: No breakdown occurred. ; #: Limit				

A2.10	TABLE: Wet leakage current test MST 17 (after Hot-spot endurance test MST 22)			P
	Test Date [MM/DD/YYYY] start/end.....:	04/11/2024		-
	Test voltage applied [V].....:	1500		-
	Solution resistivity [Ω cm].....:	< 3500 Ωcm at 22 ± 3°C	2482	-
	Surface tension [Nm ⁻¹].....:	< 0.03 Nm ⁻¹ at 22 ± 3°C	-	-
	Solution temperature [°C].....:	24.2		-
Sample No.:	Measured [GΩ]	Insulation resistance X A [MΩ.m ²] #		-
15	3.41	40		P
Supplementary information: Size of module 2.794 [m ²]. ; #: Limit				





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A2.10	TABLE: Visual Inspection MST 01		P
Sample No.:	Nature and position of findings		-
09	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
15	No visual defect		P
16	No visual defect		P
17	No visual defect		P
18	No visual defect		P
Supplementary information: NIL			





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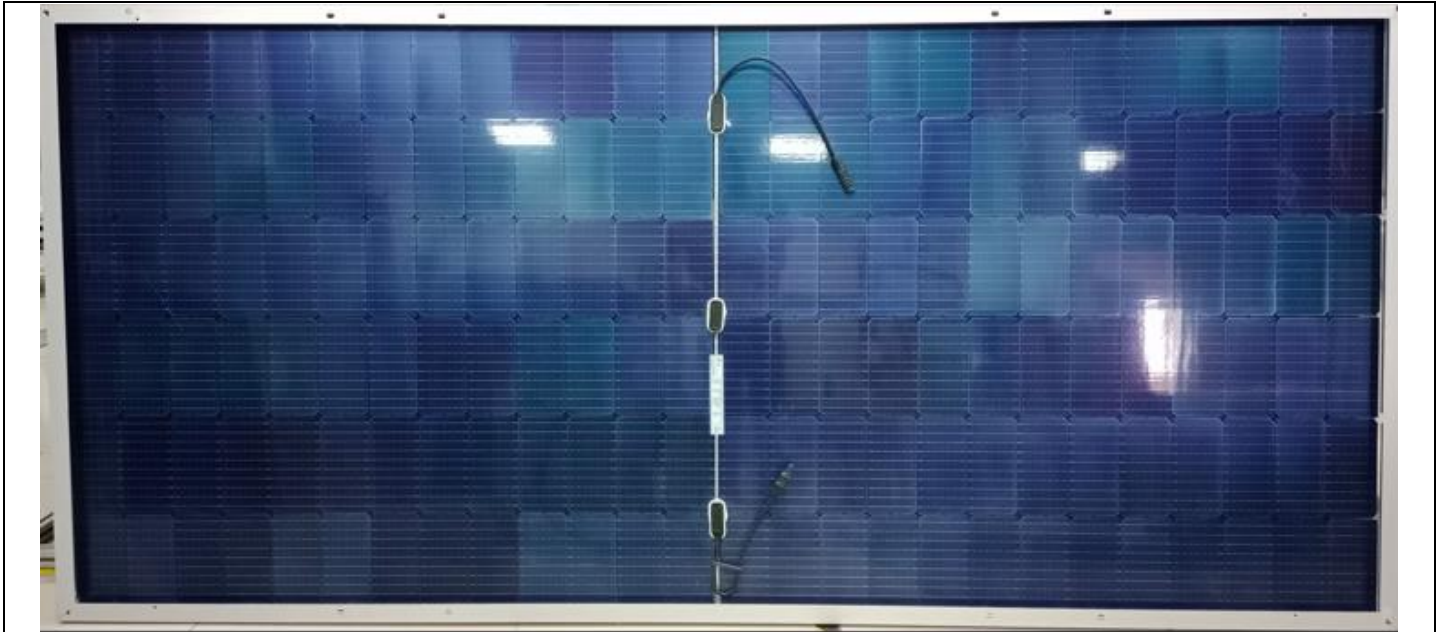


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ANNEX 3: PHOTOGRAPHS OF EUT



Rear view



Front view





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Junction Box closed view



Junction Box opened view



Negative Connector



Positive Connector





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ANNEX 4: SPECIFICATION OF PV MODULES

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)		
ISEN620N-TOP (Representative Model)	1500	55.65	46.75	14.06	13.27	620	30 A	2464	1134	35	156	52
ISEN615N-TOP	1500	55.50	46.48	14.02	13.24	615	30 A	2464	1134	35	156	52
ISEN610N-TOP	1500	55.35	46.20	13.99	13.21	610	30 A	2464	1134	35	156	52
ISEN605N-TOP	1500	55.22	45.92	13.95	13.18	605	30 A	2464	1134	35	156	52
ISEN600N-TOP	1500	55.01	45.66	13.91	13.15	600	30 A	2464	1134	35	156	52
ISEN590N-TOP	1500	51.88	44.05	14.18	13.40	590	30 A	2278	1134	35	144	48
ISEN585N-TOP	1500	51.74	43.80	14.14	13.37	585	30 A	2278	1134	35	144	48
ISEN580N-TOP	1500	51.60	43.56	14.10	13.33	580	30 A	2278	1134	35	144	48
ISEN575N-TOP	1500	51.46	43.43	14.06	13.29	575	30 A	2278	1134	35	144	48
ISEN570N-TOP	1500	51.32	43.07	14.02	13.25	570	30 A	2278	1134	35	144	48
ISEN565N-TOP	1500	51.19	42.82	13.99	13.21	565	30 A	2278	1134	35	144	48
ISEN560N-TOP	1500	51.04	42.60	13.95	13.15	560	30 A	2278	1134	35	144	48
ISEN540N-TOP	1500	49.96	40.02	14.36	13.50	540	30 A	2094	1134	35	132	44
ISEN535N-TOP	1500	49.80	39.88	14.32	13.42	535	30 A	2094	1134	35	132	44
ISEN530N-TOP	1500	46.63	39.64	14.27	13.38	530	30 A	2094	1134	35	132	44
ISEN525N-TOP	1500	46.47	39.38	14.23	13.34	525	30 A	2094	1134	35	132	44
ISEN520N-TOP	1500	46.30	39.27	14.19	13.25	520	30 A	2094	1134	35	132	44
ISEN500N-TOP	1500	43.37	36.42	14.46	13.73	500	30 A	1908	1134	35	120	40
ISEN495N-TOP	1500	43.21	36.22	14.40	13.67	495	30 A	1908	1134	35	120	40
ISEN490N-TOP	1500	43.05	36.01	14.34	13.61	490	30 A	1908	1134	35	120	40
ISEN485N-TOP	1500	42.89	35.80	14.28	13.55	485	30 A	1908	1134	35	120	40
ISEN480N-TOP	1500	42.73	35.59	14.22	13.49	480	30 A	1908	1134	35	120	40
ISEN475N-TOP	1500	42.56	35.37	14.16	13.43	475	30 A	1908	1134	35	120	40
ISEN470N-TOP	1500	42.40	35.16	14.11	13.37	470	30 A	1908	1134	35	120	40
ISEN465N-TOP	1500	42.24	34.94	14.05	13.31	465	30 A	1908	1134	35	120	40
ISEN460N-TOP	1500	42.07	34.72	13.99	13.25	460	30 A	1908	1134	35	120	40
ISEN440N-TOP	1500	38.63	32.98	14.30	13.35	440	30 A	1722	1134	35	108	36
ISEN435N-TOP	1500	38.50	32.76	14.22	13.30	435	30 A	1722	1134	35	108	36
ISEN430N-TOP	1500	38.42	32.49	14.13	13.25	430	30 A	1722	1134	35	108	36
ISEN425N-TOP	1500	38.29	32.23	14.05	13.20	425	30 A	1722	1134	35	108	36
ISEN420N-TOP	1500	38.16	31.96	13.98	13.15	420	30 A	1722	1134	35	108	36

..... End of report

