

DOC No. : 24E589AN_1 A-29, Sector 5, Noida, Gautam Buddha Nagar, Uttar
Telephone : +91 9871062220 Pradesh, India - 201301
FAX : -
E-Mail : testing.a29@urs-labs.com
BO Code : NA

**Test REPORT AS PER : IS/IEC 61730 : PART 1
(2004)**

QR Code/Barcode : 210294CRS

REPORT NO : SC24SPI02128_1

DATE : 28 Dec, 2024

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Customer Name & Address : INTEGRATED BATTERIES INDIA PVT LTD
Plot No 40 Ecotech 10 Greater Noida, NA, Uttar
Pradesh, India - 201301
b) Nature of sample : -
c) Grade/Variety/Type/Class Size etc : NA
d) Declare values, if any : -
e) Batch No. & Date of Manufacture : /
f) Quantity : 1
g) Date of Receipt : 15 Oct, 2024
h) BIS Seal : Verified by Sample Cell
i) IO's Signature : Verified by Sample Cell
j) Any other Information / Expiry Date, If any : /
k) Date of Commencement of Testing : 26 Dec, 2024
l) Date of Completion of Testing : 27 Dec, 2024
m) Section Code : 24E589AN
n) Section Report No. : 24E589AN_1
o) Report Type : New
p) Reference Report No. :
q) Remarks :

Anjali Kanojia
OIC SAMPLE CELL
(Authorized Signatory)
Authorized on: 28 Dec, 2024 11:43 AM

1.

This is a Computer Generated Report.

PART B. SUPPLEMENTARY INFORMATION

- | | |
|--|----------------|
| 1. Reference to sampling procedure, wherever applicable. | Not Applicable |
| 2. Supporting documents for the measurements taken and results derived like graphs, table sketches and or photographs as appropriate to test report, if any. | Yes |
| 3. Deviation from the test methods as prescribed in relevant ISS/Work instruction, if any. | Not Applicable |
| 3. NABL Report required ? | Yes |

Paras Singh

OIC Electrical

(Authorized Signatory)

Authorized on: 27 Dec, 2024 18:29 PM

This is a Computer Generated Report.

PART C. TEST RESULT

S.No.	Clause No Table No. Sl. No	Parameter - Method of test	Test Description	Min Limit	Max Limit	Unit	Result/ Observation
1	12		-	-	-	-	Satisfactory (refer to attachment)
2	11	Marking	-	-	-	-	Satisfactory (refer to attachment)
3	10	Field wiring compartments with covers	mm, Cu. cm.	-	-	-	Satisfactory (refer to attachment)
4	9	Creepage and clearance distances	mm	-	-	-	Satisfactory (refer to attachment)
5	8	Bonding and grounding	Ω	-	-	-	Satisfactory (refer to attachment)
6	7	Connections	mm, °C. or certificate verification	-	-	-	Satisfactory (refer to attachment)
7	6	Internal wiring and current-carrying parts	mm sq., mm. or certificate verification	-	-	-	Satisfactory (refer to attachment)
8	5	Polymeric materials	°C, mm. or certificate verification	-	-	-	Satisfactory (refer to attachment)
9	4	Construction requirements	-	-	-	-	Satisfactory (refer to attachment)
10	3	Application classes	-	-	-	-	Satisfactory (refer to attachment)

Paras Singh
OIC Electrical
(Authorized Signatory)
Authorized on: 27 Dec, 2024 18:29 PM

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Section Report No. : 24E589AN_1

IS/IEC 61730 : PART 1 (2004)

.....
PART D. REMARKS

Paras Singh
OIC Electrical
(Authorized Signatory)
Authorized on: 27 Dec, 2024 18:29 PM

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CIN NO U21014UP1987PTC008956



SUMMARY OF TEST REPORT

TEST REPORT NO:SC24SPI02128_1

DATED: 27/12/2024

(Total Number of Pages in Test Report: 37)

TEST FORMAT AS PER IS/IEC 61730-1:2004 (First Edition) + A1:2017 + A2:2017

1. Name of the Manufacturer: INTEGRATED BATTERIES INDIA PVT LTD.

2. Product: Crystalline silicon terrestrial photovoltaic (PV) modules (Si wafer based).

3. Model Tested: IBMPH-640 (Representative Model) 156 Half cut cell family

Series Models:

156 Half cut cell family

IBMPH-635, IBMPH-630, IBMPH-625, IBMPH-620, IBMPH-615, IBMPH-610, IBMPH-605

144 Half cut cell family

IBMPH-600, IBMPH-595, IBMPH-590, IBMPH-585, IBMPH-580, IBMPH-575, IBMPH-570, IBMPH-565,

IBMPH-560, IBMPH-555, IBMPH-550

4. Model differences provided (if applicable): Yes

5. Model differences verified as per MNRE Guidelines for series approval: Yes

6. Test Results:

SL.	TEST REQUIREMENT	CLAUSE	VERDICT
1	Application Classes	3	P
2	Construction Requirements	4	P
3	Polymeric Materials	5	P
4	Internal Wiring And Current-Carrying Parts	6	P
5	Connections	7	P
6	Bonding And Grounding	8	P
7	Creepage and clearance distances	9	P
8	Field Wiring Compartments With Covers	10	P
9	Marking	11	P
10	Requirements for supplied documents	12	P



ULR-TC646824100009994F



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Dated : 27/12/2024

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General Information:

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 61730-1:2004 (First Edition) + A1:2017 + A2:2017
- 2. ~~Sample fails to meet the following test requirements.~~

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/IEC61730-1:2004 (First Edition) + A1:2017 + A2:2017.



Date: 27/12/2024

(Signature of Authorized person with Stamp)



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Test Report No: SC24SPI02128_1
Dated : 27/12/2024

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TEST REPORT IS/IEC 61730-1:2004 +A1:2017+A2:2017 PV Module Safety Qualification Part 1: Requirements for construction	
Report Reference No.....:	SC24SPI02128_1
Date of issue	27/12/2024
Total number of pages.....	37
Testing Laboratory.....:	URS PRODUCTS AND TESTING PRIVATE LIMITED
Address.....	A-29, Sector 5, Noida-201301, India
Applicant's name	INTEGRATED BATTERIES INDIA PVT LTD
Address	Plot No 40 Ecotech 10 Greater Noida, Uttar Pradesh, 201301
Test specification.....:	
Standard	IS/IEC 61730-1:2004+A1:2017+A2:2017
Test procedure.....:	Compliance Report
Non-standard test method.....:	N/A
Test Report Form No.....:	IS/IEC61730-1_V1.0
Test Report Form(s) Originator.....:	BIS
Master TRF.....:	Dated 19.02.2018
Test item description	Crystalline Silicon Terrestrial Photovoltaic (PV) Modules (Si Wafer Based)
Trade Mark	
Manufacturer.....:	INTEGRATED BATTERIES INDIA PVT LTD
Address	Plot No 40 Ecotech 10 Greater Noida, Uttar Pradesh, 201301
Model/Type reference.....:	Model Tested: IBMPH-640 (Representative Model) 156 Half cut cell family Series Models: 156 Half cut cell family IBMPH-635, IBMPH-630, IBMPH-625, IBMPH-620, IBMPH-615, IBMPH-610, IBMPH-605 144 Half cut cell family IBMPH-600, IBMPH-595, IBMPH-590, IBMPH-585, IBMPH-580, IBMPH-575, IBMPH-570, IBMPH-565, IBMPH-560, IBMPH-555, IBMPH-550
Rating.....:	See copy of Marking label and General product information.





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Dated : 27/12/2024

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Testing procedure and testing location:		
☒ Testing Laboratory:	URS PRODUCTS AND TESTING PRIVATE LIMITED	
Testing location/ address.....:	A-29, Sector 5, Noida-201301, India	
Tested by (name + signature)	Avishek Mishra (Analyst)	
Approved by (name + signature).: 	Paras Singh (General Manager Technical)	
Issued by (name + signature):	Hebin Manuel (Lab Manager)	





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List of Attachments (including a total number of pages in each attachment): 36 to 38– Photographs and Specification of PV modules	
Summary of testing:	
Tests performed (name of test and test clause):	Testing location: URS PRODUCTS AND TESTING PRIVATE LIMITED A-29, Sector 5, Noida-201301, India
3 Application Classes	
4 Construction Requirements	
5 Polymeric Materials	
6 Internal Wiring and Current-Carrying Parts	
7 Connections	
8 Bonding and Grounding	
9 Creepage and Clearances Distances	
10 Field Wiring Compartments With Covers	
11 Marking	
12 Requirements For Supplied Documents	
The product fulfils the requirements of IS/IEC 61730-1:2004 +A1:2017+A2:2017	





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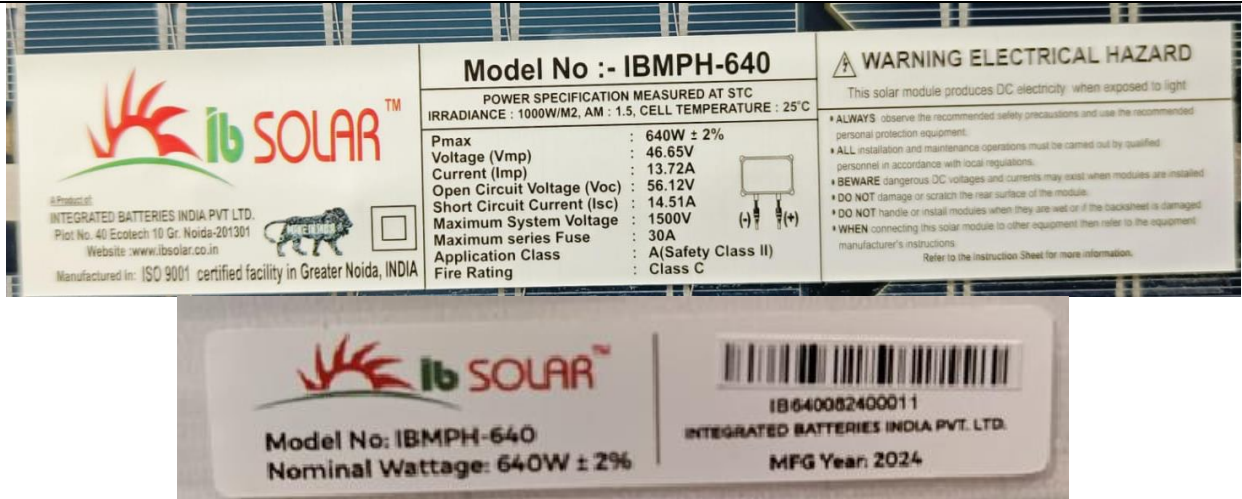
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Copy of Marking Plate
(Model Tested: IBMPH-640)



Date of manufacturing through serial no. traceability:
6th & 7th digit: 08(August)
8th & 9th digit: 24(Year 2024)
So, Date of manufacturing: 08/2024(MM/YYYY)

Polarity marking on Connectors



Polarity marking on Junction Box



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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156 Half cut cell family Series Models: IBMPH-635

ib SOLAR™

A Product of:
INTEGRATED BATTERIES INDIA PVT LTD.
Plot No. 40 Ecotech 10 Gr. Noida-201301
Website :www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA



Model No :- IBMPH-635

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 635W ± 2%
Voltage (Vmp)	: 46.44V
Current (Imp)	: 13.68A
Open Circuit Voltage (Voc)	: 55.99V
Short Circuit Current (Isc)	: 14.43A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C



WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
 - ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
 - BEWARE dangerous DC voltages and currents may exist when modules are installed
 - DO NOT damage or scratch the rear surface of the module.
 - DO NOT handle or install modules when they are wet or if the backsheet is damaged
 - WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions
- Refer to the Instruction Sheet for more information.



IB635082400001

MODEL NO	: IBMPH-635
NOMINAL WATTAGE	: 635W ± 2%
YEAR OF MFG	: 2024
MFG ORIGIN	: INDIA

(Series Model: IBMPH-630)

ib SOLAR™

A Product of:
INTEGRATED BATTERIES INDIA PVT LTD.
Plot No. 40 Ecotech 10 Gr. Noida-201301
Website :www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA



Model No :- IBMPH-630

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 630W ± 2%
Voltage (Vmp)	: 46.27V
Current (Imp)	: 13.62A
Open Circuit Voltage (Voc)	: 55.86V
Short Circuit Current (Isc)	: 14.35A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C



WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
 - ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
 - BEWARE dangerous DC voltages and currents may exist when modules are installed
 - DO NOT damage or scratch the rear surface of the module.
 - DO NOT handle or install modules when they are wet or if the backsheet is damaged
 - WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions
- Refer to the Instruction Sheet for more information.



IB630082400001

MODEL NO	: IBMPH-630
NOMINAL WATTAGE	: 630W ± 2%
YEAR OF MFG	: 2024
MFG ORIGIN	: INDIA





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(Series Model: IBMPH-625)



Model No :- IBMPH-625	
POWER SPECIFICATION MEASURED AT STC IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C	
Pmax	: 625W ± 2%
Voltage (Vmp)	: 46.1V
Current (Imp)	: 13.56A
Open Circuit Voltage (Voc)	: 55.72V
Short Circuit Current (Isc)	: 14.27A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD
This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.



MODEL NO	: IBMPH-625
NOMINAL WATTAGE	: 625W ± 2%
YEAR OF MFG	: 2024
MFG ORIGIN	: INDIA



(Series Model:IBMPH-620)



Model No :- IBMPH-620	
POWER SPECIFICATION MEASURED AT STC IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C	
Pmax	: 620W ± 2%
Voltage (Vmp)	: 45.93V
Current (Imp)	: 13.5A
Open Circuit Voltage (Voc)	: 55.58V
Short Circuit Current (Isc)	: 14.19A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD
This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.



MODEL NO	: IBMPH-620
NOMINAL WATTAGE	: 620W ± 2%
YEAR OF MFG	: 2024
MFG ORIGIN	: INDIA





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(Series Model: IBMPH-615)

A Product of:
INTEGRATED BATTERIES INDIA PVT LTD.
Plot No. 40 Ecotech 10 Gr, Noida-201301
Website : www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-615

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 615W ± 2%
Voltage (Vmp)	: 45.77V
Current (Imp)	: 13.44A
Open Circuit Voltage (Voc)	: 55.44V
Short Circuit Current (Isc)	: 14.11A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.

MODEL NO : IBMPH-615
NOMINAL WATTAGE : 615W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA

IB615082400001

(Series Model: IBMPH-610)

A Product of:
INTEGRATED BATTERIES INDIA PVT LTD.
Plot No. 40 Ecotech 10 Gr, Noida-201301
Website : www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-610

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 610W ± 2%
Voltage (Vmp)	: 45.6V
Current (Imp)	: 13.38A
Open Circuit Voltage (Voc)	: 55.31V
Short Circuit Current (Isc)	: 14.03A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.

MODEL NO : IBMPH-610
NOMINAL WATTAGE : 610W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA

IB610082400001





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(Series Model: IBMPH-605)																				
 A Product of: INTEGRATED BATTERIES INDIA PVT LTD. Plot No. 40 Ecotech 10 Gr. Noida-201301 Website : www.ibsolar.co.in  Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA	Model No :- IBMPH-605 POWER SPECIFICATION MEASURED AT STC IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C <table><tr><td>Pmax</td><td>: 605W ± 2%</td></tr><tr><td>Voltage (Vmp)</td><td>: 45.42V</td></tr><tr><td>Current (Imp)</td><td>: 13.32A</td></tr><tr><td>Open Circuit Voltage (Voc)</td><td>: 55.17V</td></tr><tr><td>Short Circuit Current (Isc)</td><td>: 13.95A</td></tr><tr><td>Maximum System Voltage</td><td>: 1500V</td></tr><tr><td>Maximum series Fuse</td><td>: 30A</td></tr><tr><td>Application Class</td><td>: A(Safety Class II)</td></tr><tr><td>Fire Rating</td><td>: Class C</td></tr></table> 	Pmax	: 605W ± 2%	Voltage (Vmp)	: 45.42V	Current (Imp)	: 13.32A	Open Circuit Voltage (Voc)	: 55.17V	Short Circuit Current (Isc)	: 13.95A	Maximum System Voltage	: 1500V	Maximum series Fuse	: 30A	Application Class	: A(Safety Class II)	Fire Rating	: Class C	 WARNING ELECTRICAL HAZARD This solar module produces DC electricity when exposed to light • ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment. • ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations. • BEWARE dangerous DC voltages and currents may exist when modules are installed • DO NOT damage or scratch the rear surface of the module. • DO NOT handle or install modules when they are wet or if the backsheet is damaged • WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions Refer to the Instruction Sheet for more information.
	Pmax	: 605W ± 2%																		
Voltage (Vmp)	: 45.42V																			
Current (Imp)	: 13.32A																			
Open Circuit Voltage (Voc)	: 55.17V																			
Short Circuit Current (Isc)	: 13.95A																			
Maximum System Voltage	: 1500V																			
Maximum series Fuse	: 30A																			
Application Class	: A(Safety Class II)																			
Fire Rating	: Class C																			
 <table><tr><td>MODEL NO</td><td>: IBMPH-605</td></tr><tr><td>NOMINAL WATTAGE</td><td>: 605W ± 2%</td></tr><tr><td>YEAR OF MFG</td><td>: 2024</td></tr><tr><td>MFG ORIGIN</td><td>: INDIA</td></tr></table>	MODEL NO	: IBMPH-605	NOMINAL WATTAGE	: 605W ± 2%	YEAR OF MFG	: 2024	MFG ORIGIN	: INDIA	 IB605082400001											
MODEL NO	: IBMPH-605																			
NOMINAL WATTAGE	: 605W ± 2%																			
YEAR OF MFG	: 2024																			
MFG ORIGIN	: INDIA																			





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CIN NO U21014UP1987PTC008956



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Dated : 27/12/2024

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144 Half cut cell family (Series Model): IBMPH-600

A Product of:
INTEGRATED BATTERIES INDIA PVT LTD.
Plot No. 40 Ecotech 10 Gr. Noida-201301
Website :www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-600

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 600W ± 2%
Voltage (Vmp)	: 43.78V
Current (Imp)	: 13.71A
Open Circuit Voltage (Voc)	: 52.1V
Short Circuit Current (Isc)	: 14.61A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.

MODEL NO : IBMPH-600
NOMINAL WATTAGE : 600W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA

IB600082400001

(Series Model: IBMPH-595)

A Product of:
INTEGRATED BATTERIES INDIA PVT LTD.
Plot No. 40 Ecotech 10 Gr. Noida-201301
Website :www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-595

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 595W ± 2%
Voltage (Vmp)	: 43.61V
Current (Imp)	: 13.64A
Open Circuit Voltage (Voc)	: 51.9V
Short Circuit Current (Isc)	: 14.53A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.

MODEL NO : IBMPH-595
NOMINAL WATTAGE : 595W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA

IB595082400001





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(Series Model: IBMPH-590)

ib SOLAR™

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Plot No. 40 Ecotech 10 Gr. Noida-201301
Website :www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-590

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 590W ± 2%
Voltage (Vmp)	: 43.45V
Current (Imp)	: 13.58A
Open Circuit Voltage (Voc)	: 51.7V
Short Circuit Current (Isc)	: 14.45A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.

MODEL NO : IBMPH-590
NOMINAL WATTAGE : 590W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA

IB590082400001

(Series Model: IBMPH-585)

ib SOLAR™

A Product of:
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Plot No. 40 Ecotech 10 Gr. Noida-201301
Website :www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-585

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 585W ± 2%
Voltage (Vmp)	: 43.27V
Current (Imp)	: 13.52A
Open Circuit Voltage (Voc)	: 51.5V
Short Circuit Current (Isc)	: 14.36A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.

MODEL NO : IBMPH-585
NOMINAL WATTAGE : 585W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA

IB585082400001





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(Series Model: IBMPH-580)

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Plot No. 40 Ecotech 10 Gr. Noida-201301
Website : www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-580

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 580W ± 2%
Voltage (Vmp)	: 42.59V
Current (Imp)	: 13.62A
Open Circuit Voltage (Voc)	: 51.47V
Short Circuit Current (Isc)	: 14.37A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.

MODEL NO : IBMPH-580
NOMINAL WATTAGE : 580W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA

IB580082400001

(Series Model: IBMPH-575)

A Product of:
INTEGRATED BATTERIES INDIA PVT LTD.
Plot No. 40 Ecotech 10 Gr. Noida-201301
Website : www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-575

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 575W ± 2%
Voltage (Vmp)	: 42.44V
Current (Imp)	: 13.55A
Open Circuit Voltage (Voc)	: 51.27V
Short Circuit Current (Isc)	: 14.31A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.

MODEL NO : IBMPH-575
NOMINAL WATTAGE : 575W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA

IB575082400001





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(Series Model: IBMPH-570)																				
 A Product of: INTEGRATED BATTERIES INDIA PVT LTD. Plot No. 40 Ecotech 10 Gr, Noida-201301 Website : www.ibsolar.co.in Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA	Model No :- IBMPH-570 POWER SPECIFICATION MEASURED AT STC IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C <table><tr><td>Pmax</td><td>: 570W ± 2%</td></tr><tr><td>Voltage (Vmp)</td><td>: 42.29V</td></tr><tr><td>Current (Imp)</td><td>: 13.48A</td></tr><tr><td>Open Circuit Voltage (Voc)</td><td>: 51.07V</td></tr><tr><td>Short Circuit Current (Isc)</td><td>: 14.25A</td></tr><tr><td>Maximum System Voltage</td><td>: 1500V</td></tr><tr><td>Maximum series Fuse</td><td>: 30A</td></tr><tr><td>Application Class</td><td>: A(Safety Class II)</td></tr><tr><td>Fire Rating</td><td>: Class C</td></tr></table> 	Pmax	: 570W ± 2%	Voltage (Vmp)	: 42.29V	Current (Imp)	: 13.48A	Open Circuit Voltage (Voc)	: 51.07V	Short Circuit Current (Isc)	: 14.25A	Maximum System Voltage	: 1500V	Maximum series Fuse	: 30A	Application Class	: A(Safety Class II)	Fire Rating	: Class C	 WARNING ELECTRICAL HAZARD This solar module produces DC electricity when exposed to light • ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment. • ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations. • BEWARE dangerous DC voltages and currents may exist when modules are installed • DO NOT damage or scratch the rear surface of the module. • DO NOT handle or install modules when they are wet or if the backsheet is damaged • WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions Refer to the Instruction Sheet for more information.
	Pmax	: 570W ± 2%																		
Voltage (Vmp)	: 42.29V																			
Current (Imp)	: 13.48A																			
Open Circuit Voltage (Voc)	: 51.07V																			
Short Circuit Current (Isc)	: 14.25A																			
Maximum System Voltage	: 1500V																			
Maximum series Fuse	: 30A																			
Application Class	: A(Safety Class II)																			
Fire Rating	: Class C																			
 MODEL NO : IBMPH-570 NOMINAL WATTAGE : 570W ± 2% YEAR OF MFG : 2024 MFG ORIGIN : INDIA	 IB570082400001																			

(Series Model: IBMPH-565)																				
 A Product of: INTEGRATED BATTERIES INDIA PVT LTD. Plot No. 40 Ecotech 10 Gr, Noida-201301 Website : www.ibsolar.co.in Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA	Model No :- IBMPH-565 POWER SPECIFICATION MEASURED AT STC IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C <table><tr><td>Pmax</td><td>: 565W ± 2%</td></tr><tr><td>Voltage (Vmp)</td><td>: 42.14V</td></tr><tr><td>Current (Imp)</td><td>: 13.41A</td></tr><tr><td>Open Circuit Voltage (Voc)</td><td>: 50.87V</td></tr><tr><td>Short Circuit Current (Isc)</td><td>: 14.19A</td></tr><tr><td>Maximum System Voltage</td><td>: 1500V</td></tr><tr><td>Maximum series Fuse</td><td>: 30A</td></tr><tr><td>Application Class</td><td>: A(Safety Class II)</td></tr><tr><td>Fire Rating</td><td>: Class C</td></tr></table> 	Pmax	: 565W ± 2%	Voltage (Vmp)	: 42.14V	Current (Imp)	: 13.41A	Open Circuit Voltage (Voc)	: 50.87V	Short Circuit Current (Isc)	: 14.19A	Maximum System Voltage	: 1500V	Maximum series Fuse	: 30A	Application Class	: A(Safety Class II)	Fire Rating	: Class C	 WARNING ELECTRICAL HAZARD This solar module produces DC electricity when exposed to light • ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment. • ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations. • BEWARE dangerous DC voltages and currents may exist when modules are installed • DO NOT damage or scratch the rear surface of the module. • DO NOT handle or install modules when they are wet or if the backsheet is damaged • WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions Refer to the Instruction Sheet for more information.
	Pmax	: 565W ± 2%																		
Voltage (Vmp)	: 42.14V																			
Current (Imp)	: 13.41A																			
Open Circuit Voltage (Voc)	: 50.87V																			
Short Circuit Current (Isc)	: 14.19A																			
Maximum System Voltage	: 1500V																			
Maximum series Fuse	: 30A																			
Application Class	: A(Safety Class II)																			
Fire Rating	: Class C																			
 MODEL NO : IBMPH-565 NOMINAL WATTAGE : 565W ± 2% YEAR OF MFG : 2024 MFG ORIGIN : INDIA	 IB565082400001																			





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(Series Model: IBMPH-560)



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Plot No. 40 Ecotech 10 Gr. Noida-201301
Website :www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-560

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax : 560W ± 2%
Voltage (Vmp) : 41.95V
Current (Imp) : 13.35A
Open Circuit Voltage (Voc) : 50.67V
Short Circuit Current (Isc) : 14.13A
Maximum System Voltage : 1500V
Maximum series Fuse : 30A
Application Class : A(Safety Class II)
Fire Rating : Class C



WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed.
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged.
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.



MODEL NO : IBMPH-560
NOMINAL WATTAGE : 560W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA



IB560082400001

(Series Model: IBMPH-555)



A Product of:
INTEGRATED BATTERIES INDIA PVT LTD.
Plot No. 40 Ecotech 10 Gr. Noida-201301
Website :www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-555

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax : 555W ± 2%
Voltage (Vmp) : 41.78V
Current (Imp) : 13.28A
Open Circuit Voltage (Voc) : 50.49V
Short Circuit Current (Isc) : 14.06A
Maximum System Voltage : 1500V
Maximum series Fuse : 30A
Application Class : A(Safety Class II)
Fire Rating : Class C



WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed.
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged.
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.



MODEL NO : IBMPH-555
NOMINAL WATTAGE : 555W ± 2%
YEAR OF MFG : 2024
MFG ORIGIN : INDIA



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Plot No. 40 Ecotech 10 Gr. Noida-201301
Website :www.ibsolar.co.in
Manufactured In: ISO 9001 certified facility in Greater Noida, INDIA

Model No :- IBMPH-550

POWER SPECIFICATION MEASURED AT STC
IRRADIANCE : 1000W/M2, AM : 1.5, CELL TEMPERATURE : 25°C

Pmax	: 550W ± 2%
Voltage (Vmp)	: 41.63V
Current (Imp)	: 13.21A
Open Circuit Voltage (Voc)	: 50.28V
Short Circuit Current (Isc)	: 13.99A
Maximum System Voltage	: 1500V
Maximum series Fuse	: 30A
Application Class	: A(Safety Class II)
Fire Rating	: Class C

WARNING ELECTRICAL HAZARD

This solar module produces DC electricity when exposed to light

- ALWAYS observe the recommended safety precautions and use the recommended personal protection equipment.
- ALL installation and maintenance operations must be carried out by qualified personnel in accordance with local regulations.
- BEWARE dangerous DC voltages and currents may exist when modules are installed
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install modules when they are wet or if the backsheet is damaged
- WHEN connecting this solar module to other equipment then refer to the equipment manufacturer's instructions

Refer to the Instruction Sheet for more information.

MODEL NO	: IBMPH-550
NOMINAL WATTAGE	: 550W ± 2%
YEAR OF MFG	: 2024
MFG ORIGIN	: INDIA

IB550082400001





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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.....:	15/10/2024
Date(s) of performance of tests.....:	15/10/2024 to 27/12/2024

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 61730-1:2004 +A1:2017+A2:2017. It can only be used together with IS/IEC 61730-2:2004 +A1:2017 Test Report.	
Name and address of factory (ies).....:	INTEGRATED BATTERIES INDIA PVT LTD Plot No 40 Ecotech 10 Greater Noida, Uttar Pradesh, 201301





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CIN NO U21014UP1987PTC008956



General product information:	
PV module type reference.....:	IBMPH-640 (Representative Model)
Product Electrical Ratings at STC	
Nominal maximum power (Pmax).....:	640W
Nominal open circuit voltage at (Voc).....:	56.62V
Nominal short circuit current at (Isc).....:	14.51A
Nominal maximum power voltage (Vpm).....:	46.65V
Nominal maximum power current (Ipm).....:	13.72A
Product Safety Ratings	
Maximum systems operating voltage.....:	1500V
Maximum over-current protection rating.....:	30A
Safety Application class.....:	Class A
Safety class in accordance with IEC 61140.....:	Class II
Fire safety class.....:	Class C
Recommended maximum series/parallel module configurations.....:	24 for 156 cell family series 28 for 144 cell family series
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	☐ Change in cell interconnect materials/technique
☐ Modification to encapsulation system	☐ Modification to junction box/el. Termination
☐ Modification to superstrate	☐ Change in el. circuit of an identical package
☐ Modification to backsheet/substrate	☐ Higher or lower output by 10 %
☐ Modification to frame/mounting structure	☐ Increase in module size
☐ Removal of frame	

- 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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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)	● Pmp ● Voc ● Isc ● Vmp ● Imp ● Module size	● 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
1.	IBMPH-640 (Representative Model)	1500	56.12	46.65	14.51	13.72	640		
156 Half cut cell family(Series Models):									
2.	IBMPH-635	1500	55.99	46.44	14.43	13.68	635		
3.	IBMPH-630	1500	55.86	46.27	14.35	13.62	630		
4.	IBMPH-625	1500	55.72	46.10	14.27	13.56	625		
5.	IBMPH-620	1500	55.58	45.93	14.19	13.50	620		
6.	IBMPH-615	1500	55.44	45.77	14.11	13.44	615		
7.	IBMPH-610	1500	55.31	45.60	14.03	13.38	610		
8.	IBMPH-605	1500	55.17	45.42	13.95	13.32	605		
144 Half cut cell family(Series Models):									
9.	IBMPH-600	1500	52.10	43.78	14.61	13.71	600		
10.	IBMPH-595	1500	51.90	43.61	14.53	13.64	595		
11.	IBMPH-590	1500	51.70	43.45	14.45	13.58	590		
12.	IBMPH-585	1500	51.50	43.27	14.36	13.52	585		
13.	IBMPH-580	1500	51.47	42.59	14.37	13.62	580		
14.	IBMPH-575	1500	51.27	42.44	14.31	13.55	575		
15.	IBMPH-570	1500	51.07	42.29	14.25	13.48	570		
16.	IBMPH-565	1500	50.87	42.14	14.19	13.41	565		
17.	IBMPH-560	1500	50.67	41.95	14.13	13.35	560		
18.	IBMPH-555	1500	50.49	41.78	14.06	13.28	555		
19.	IBMPH-550	1500	50.28	41.63	13.99	13.21	550		





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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
4	Construction Requirements		P
4.1	General requirements		P
4.1.1	It is stated that the module is able to operate under environmental condition type AB8 according to IEC 60364-5-51.	Satisfactory	P
4.1.2	The module/s is/are completely assembled when shipped from the factory.		P
	The module is provided in subassemblies.	No subassemblies	N/A
4.1.3	Incorporation of a module into the final assembly does not require any alteration of the module from its originally evaluated form. If YES, specific details describing necessary modification(s) are provided in the installation instructions.	No such alteration required	P
4.1.4	If a module must bear a definite relationship to another module, it is constructed to permit incorporation into the final assembly without the need for alteration.	Satisfactory	P
4.1.5	The construction of the module is such that ground continuity is not interrupted by installation.	The grounding connection is a separate connection on the frame and is not interrupted by installation.	P
4.1.6	Parts of the module are prevented from loosening or turning, if such loosening or turning may result in a risk of fire, electric shock, or injury to persons.	Satisfactory	P
4.1.7	Friction between surfaces is not used as the sole means to inhibit the turning or loosening of a part.	No such part	N/A
4.1.8	Any adjustable or movable structural part is provided with a locking device to reduce the likelihood of unintentional movement.	No adjustable or movable parts used	N/A





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Clause	Requirement + Test	Result - Remark	Verdict
4.2	Metal parts		P
4.2.1	Metals used in locations that are exposed to moisture shall not be employed alone or in combinations that could result in deterioration, such that the product would not comply with the requirements in this standard.	Only aluminum is used for frame	P
4.2.2	Iron or mild steel serving as a necessary part of the module but not exposed to the weather are plated, painted, or enamelled for protection against corrosion.		N/A
4.2.3	Simple sheared or cut edges and punched holes are not required to be additionally protected.	Punched holes on Aluminum frame	P
5	Polymeric Materials		P
5.1	General		P
	Polymeric materials serving as an enclosure for live metal parts	See Sub clause 5.2	—
	Polymeric materials serving as support for live metal parts	See Sub clause 5.3	—
	Polymeric materials serving as the outer surface for the module	See Sub clause 5.4	—
	Polymeric materials serving as superstrate or a substrate which provide rigid reinforcement or serve as the carrier for the active cells		—
	a) If the superstrate or substrate polymers are intended for contact with active cells	See Sub clause 5.3	—
	b) If the superstrate or substrate polymers are intended for use as an outer surface	See Sub clause 5.4	—
	c) If superstrate or substrate polymers are intended for both contact with active cells or other circuit elements and for use as the outer surface	See Sub clause 5.3 and 5.4	—
	Polymeric materials serving as barriers	See Sub clause 5.5	—
	All polymeric materials have a minimum relative thermal endurance index (electrical and mechanical, as defined by IEC 60216-5) of 20°C above the maximum measured operating temperature of said material in application, as measured during the Temperature Test MST 21 given in IS/IEC 61730-2.	Satisfactory	P





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Clause	Requirement + Test	Result - Remark	Verdict
5.2	Polymers serving as an enclosure for live parts		P
	Information is provided that polymers serving as an enclosure for live parts comply with:		—
	a) 5-V flammability rating (IEC 60695-11-20)	Satisfactory. Certified component used, see Annex 1.	P
	b) 5-V flammability rating, after water immersion and exposure of the end-product (IEC 60695-11-20)		P
	c) Ultraviolet radiation resistance (ANSI/UL 746C or ISO 4892-2)		P
	d) Minimum hot wire ignition rating of 30 (IEC 60695-2-20)		P
5.3	Polymers serving to support live parts		P
	Information is provided that polymers serving to support live parts comply with:		—
	a) Flammability classification and high-current arc ignition rating (IEC 60695-11-10) as given in Table 1 of IS/IEC 61730-1	Satisfactory. Certified component used, See Annex 1.	P
	b) Comparative Tracking Index (CTI) $\geq$ 250		N/A
	Comparative Tracking Index (IEC 60112).....:		—
	c) Inclined plane tracking rating of 1 h, using the time to track method at 2.5 kV (IEC 60587), if the maximum system operating voltage rating is in the range 600 V – 1500V.		N/A
	Maximum system operating voltage rating (V):		—
	d) Ultraviolet radiation resistance (ANSI/UL 746C or ISO 4892-2 or ISO 4892-3)	Satisfactory. Certified component used, see Annex 1.	P
5.4	Polymers serving as an outer surface		N/A
	Information is provided that polymeric substrates or superstrates used in the module have:		—
5.4.1	A relative thermal endurance index, both electrical and mechanical, as determined in accordance with IEC 60216 of at least 90°C.....:		N/A
	A relative thermal endurance index of at least 20 °C above the maximum measured operating temperature of the material as measured during the Temperature Test MST21 of IS/IEC 61730-2.		N/A
5.4.2	Polymeric materials that serve as the outer enclosure for a module that (1) is intended to be installed in a multi-module or -panel system or (2) have an exposed surface area greater than 1 m ² or a single dimension larger than 2 m, has a maximum flame spread index of 100 as determined under ASTM E 162-1990.....:		N/A
5.4.3	If exposed to direct sunlight in the application, the polymeric material has been evaluated for ultraviolet (UV) radiation resistance as determined in accordance with ANSI/UL 746C or ISO 4892-2.		N/A
5.4.4	Polymeric materials intended for use as a superstrate or substrate, without appropriate IEC insulation pre-qualification, comply with the requirements of the Partial Discharge Test MST 15 of IS/IEC 61730-2.		N/A
5.5	Polymers serving as barriers		P
	Insulation barriers are of adequate thickness and of a material appropriate for the application, as defined by IEC 61140	Satisfactory, See Annex 1	P
	Barriers or liners are held in place and are not adversely affected	Satisfactory	P





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5.6	Polymers serving as structural glazing materials		P
	Polymers serving as structural glazing materials comply with the requirements for safety glazing by material certification (ANSI Z97.1-93) or by testing in accordance with Module Breakage Test MST 32 of IS/IEC 61730-2.	See test result of MST 32 of IS/IEC 61730-2	P
Supplementary information: Nil			

6	Internal Wiring And Current-Carrying Parts		P
	A current-carrying part and wiring has the mechanical strength and current-carrying capacity necessary for its application.	Certified component used	P
6.1	Internal wiring		P
6.1.1	Wiring used within a module has an insulation rating for a minimum of 90 °C, with a gauge and voltage rating acceptable for the application as defined by the requirements of IEC 60189-2.	90°C, See Annex 1	P
6.1.2	The wiring of a module is located so that after installation of the module in the intended manner the insulation is not exposed to degrading effects of direct sunlight.	Satisfactory	P
6.2	Splices		N/A
	Splices are insulated equivalent to that required for the wiring involved.	No such construction	N/A
6.3	Mechanical securement		P
6.3.1	Joints or connections are mechanically secure and provide electrical contact without strain on connections and terminals.	All connections are mechanically secured	P
6.3.2	Uninsulated live parts are secured to its supporting surface so that they are prevented from turning or shifting in position.	No such construction	N/A
Supplementary information: Nil			





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Clause	Requirement + Test	Result - Remark	Verdict
7	Connections		P
7.1	Field connections - general requirements		P
7.1.1	The module shall be provided with wiring terminals, connectors, or leads to accommodate current-carrying conductors of the load circuit.	Provided.	P
7.1.2	Field connections are rated for exposure to direct sunlight as defined in Clause 5 of IS/IEC 61730-1.	Satisfactory. Certified component used. See Annex 1	P
	Field connections are not exposed to the degrading effects of direct sunlight.	Satisfactory. Certified component used. See Annex 1	P
7.2	Field wiring terminals		N/A
7.2.1	Field wiring terminal blocks are rated for the appropriate voltage and current for the application and constructed in compliance with IEC 60947-1.	No such terminals	N/A
7.2.2	Wiring terminals integral to the construction of the terminal enclosure comply with the following requirements:		N/A
7.2.2.1	Screws and nuts which clamp external conductors have a thread conforming with ISO261 or ISO262 (or comparable standards)		N/A
	The screws and nuts used for field wiring do not serve to fix any other component.		N/A
7.2.2.2	Terminal screws have a minimum nominal thread diameter as shown in Table 2 of IS/IEC 61730-1.		N/A
	Stud terminals are provided with nuts and washers.		N/A
7.2.2.3	Terminals are designed that they clamp the conductor between metal surfaces with sufficient contact pressure and without damage to the conductor.		N/A
	Terminals are designed or located that the conductor cannot slip out when the clamping screws or nuts are tightened.		N/A
	Terminals are fixed suitably when the means of clamping the conductor is tightened or loosened:		N/A
	a) the terminal itself does not work loose,		N/A
	b) internal wiring is not subjected to stress,		N/A
	c) creepage distances and clearances are not reduced below the values specified in clause 9 of IS/IEC 61730-1.		N/A
7.3	Connectors		P
7.3.1	The connector intended for use in the output circuit of the module is rated for the appropriate voltage and current, as per the requirements of the IEC 61984 series.	1500V, 30A, See Annex 1	P
	Connectors comply with the requirements of Clause 5 of IS/IEC 61730-1, with respect to flammability, comparative tracking index and relative thermal endurance index for the support of live parts.	Certified connector used	P
7.3.2	The connector has been appropriately evaluated for disconnect overload performance.	Marked as "Do not disconnect under load"	P





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7.3.3	Connectors intended for exposure to the outdoor environment are enclosed by material which complies with the following:		P
	a) UV resistance in accordance with the requirements of Clause 5.	Certified connector used	P
	b) Resistance to inclusion of water acc. to IEC 60529 (equivalent to IP55)	IP 68	P
	c) Steel ball impact test acc. to IEC 60065, sub clause 12.1.3 and Figure 8 with a vertical drop distance of 1 m.	Satisfactory	P
	d) Accessibility Test MST 11 of IS/IEC 61730-2	Certified connector used, See Annex 1. Also, see test result of IS/IEC 61730-2 MST 11.	P
7.3.4	Separable multi-pole connectors are polarised.		N/A
	If two or more separable connectors are provided, they are configured or arranged so that the other will not accept the mating connector for one.		N/A
7.3.5	For a connector incorporating a grounding member, the grounding member is the first to make and the last to break contact with the mating connector.	No grounding member in the connector	N/A
7.3.6	Connectors that can be separated without the use of a tool do not have accessible conductive parts, as determined under the Accessibility Test MST 11 of IS/IEC 61730-2.	Refer IS/IEC 61730-2 MST 11	P
7.4	Output lead or cables		P
	Leads extending from the module are rated for the appropriate system voltage, ampacity, wet locations, temperature and sunlight resistance.	1500V, Certified component used	P
Supplementary information: Nil			





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Clause	Requirement + Test	Result - Remark	Verdict
8	Bonding And Grounding		P
8.1	If accessible conductive parts of the module form a perimeter framing or mounting system, or if the module has a conductive surface area of greater than 10 cm ² accessible after installation, then the module has provisions for grounding.	Grounding provision provided on the module frame. Grounding position and the way to grounding are stated in the installation manual.	P
8.2	If the module is rated as safety class II and provided with provisions for functional grounding, the functional grounding is isolated from live parts by reinforced insulation (Sub clause 7.3.2.2 of IEC 61140).	Application Class A, Provides safety class II acc. to sec. 3.2	P
8.3	Each exposed conductive part of the module, that is assessable during normal operation, is bonded together, as verified by Ground Continuity Test MST 13 of IS/IEC 61730-2. Note: If conductive materials are used only as fasteners for installation and separated from the conductive components of the module by both appropriate insulation and spacings, they are not required to be bonded.	See test result of MST11 of IS/IEC 61730-2	P
8.4	Routine maintenance of the module does not involve breaking or disturbing the bonding path. A bolt, screw, or other part used for bonding purposes is not intended for securing the complete device.	Bonding path is not disturbed by routine maintenance No such parts	P N/A
8.5	Bonding is by a positive means, such as clamping, riveting, bolted or screwed connections, or welding, soldering or brazing. The bonding connection penetrates all nonconductive coatings, such as paint, anodised coatings or vitreous enamel.	Hole provided on the frame for bolt.	P P
8.6	All joints in the bonding path are mechanically secure.	Bonding path is mechanically secured	P
8.7	If the bonding connection depends upon screw threads, two or more screws or two full threads of a single screw engage the metal.	No such construction	N/A
8.8	The diameter of the grounding screw or bolt is sized appropriately to the gauge of the bonding conductor, as per Table 2 of IS/IEC 61730-1.	Satisfactory (Diameter (Grounding hole): 4.23)	P
8.9	Ferrous metal parts in the grounding path are protected against corrosion by metallic or non-metallic coatings.	No such part.	N/A
8.10	The module has metal-to-metal multiple-bearing pin-type hinges. These are considered to be an acceptable means for bonding.	No hinges used	N/A





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Clause	Requirement + Test	Result - Remark	Verdict
8.11	A wiring terminal or bonding location is identified with the appropriate symbol (IEC 60417-5019) or has a green-coloured part.	Grounding symbol is marked near the location.	P
	No other terminal or location is identified in this manner.	Complied	P
8.12	If a marking is used to identify an equipment grounding terminal, it is located on or adjacent to the terminal, or on a wiring diagram affixed to the module or panel near the terminal.	Grounding symbol is marked near the location.	P
Supplementary information: Nil			

9	Creepage and clearance distances		P
9.1	Creepage and clearance distances between uninsulated live parts not of the same potential and between a live part and an accessible metal part, are not less than the values specified in Tables 3 and 4 of IS/IEC 61730-1.	Satisfactory (see below)	P
	Minimum measured creepage and clearance distances between field wiring terminals (mm).....:	N/A	—
	Minimum measured clearance distances between internal current carrying parts and accessible points (mm).....:	15 mm	—
9.2	Creepage and clearance distances at field wiring terminals have been judged on module open-circuit voltage (Voc).....:		N/A
	If additional unmarked terminals exist in the terminal block, or if wiring terminals are marked specifically for grounding, the creepage and clearance distances have been judged on the basis of the maximum system operating voltage.		N/A
9.3	The spacings at a field-wiring terminal have been measured with and without wire connected to the terminal.		N/A
	If the terminal will properly accommodate it, and if the product was not marked to restrict its use, the wire is one size larger than that required, otherwise, the wire is of the required size.		N/A
9.4	Surfaces separated by a gap of 0.4 mm or less have been considered to be in contact with each other.		N/A
Supplementary information: Nil			





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Clause	Requirement + Test	Result - Remark	Verdict
10	Field Wiring Compartments With Covers		P
10.1	General		P
	If the module is designed for the application of a permanently attached wiring system by an installer in the field, it is to be provided with an enclosed wiring compartment.	Certified junction box used	P
10.2	Wall thickness		P
	If the wiring compartment is intended for the attachment of a field-applied permanent wiring system, the minimum wall thickness for the material complies with Table 5 of IS/IEC 61730-1.	Potted certified junction box used	P
10.3	Internal volume		P
	The internal volume for each intended conductor complies with the requirements of Table 6 of IS/IEC 61730-1.	Potted certified junction box used	P
	In the space comprising the minimum required volume, no enclosure dimension is less than 20 mm.	Potted certified junction box used	P
10.4	Openings		P
	All openings are provided with appropriate coverings, whose functions comply with the requirements of:		—
	Sub clause 5.2.1 of IS/IEC 61730-1		P
	Wet leakage Current test of Sub clause 10.20 of IS 16077:2013/IEC 61646:2008 or 10.17 of IS 14286 (2010).	Refer Cl. No.: 10.17, IS/IEC 14286	P
	Accessibility test MST 11 of IS/IEC 61730-2	Refer MST 11, IS/IEC 61730-2	P
	Coverings can only be removed by the use of a tool		P
10.5	Gaskets and seals		N/A
	Gaskets and seals do not deteriorate beyond limits during accelerated ageing, and are not used where they may be subject to flexing during normal operation.		N/A
10.6	Strain relief		P
	Any strain relief is provided so that stress on a lead intended for field connection, or otherwise likely to be handled in the field, including a flexible cord, is not transmitted to the electrical connection inside the module. Note: Mechanical securement means which comply with Sub clause 10.14 (Robustness of Terminations Test) of IS 14286 (2010) meet this requirement.	Refer MST 42, IS/IEC 61730-2	P





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Clause	Requirement + Test	Result - Remark	Verdict
10.7	Sharp edges		P
10.7.1	The enclosure is smooth and free from sharp edges, burrs, or the like that may damage insulation or conductors.	No sharp edges or burrs	P
10.7.2	The inner edges of conduit openings and knockouts are smooth and free from sharp edges, burrs, or the like that may damage insulation or conductors.	No conduit and Knockout	N/A
10.8	Conduit applications – Metallic		N/A
10.8.1	Any threaded hole in a metal wiring compartment intended for the connection of rigid metal conduit is reinforced to provide metal not less than 6.4 mm thick.		N/A
	Any threaded hole is tapered unless a conduit end stop is provided.		N/A
10.8.2	If threads for the connection of conduit are tapped all the way through a hole in a compartment wall, there are not less than 3.5 nor more than 5 threads in the metal and the construction was such that a conduit bushing can be attached as intended.		N/A
	The construction is such that a conduit bushing can be attached as intended.		N/A
10.8.3	If threads for the connection of conduit are not tapped all the way through a hole in a compartment wall, there are not less than 5 full threads in the metal and there was a smooth, rounded inlet hole for the conductors.		N/A
	There are smooth, rounded inlet holes for the conductors.		N/A
10.8.4	For a non-threaded opening in a metal wiring compartment intended to accommodate rigid metallic conduit, a flat surface of sufficient area is provided around the opening to accept the bearing surfaces of the bushing and lock washer.		N/A
10.8.5	Conduit complies with the Conduit bending test MST 33 of IS/IEC 61730-2.		N/A





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Clause	Requirement + Test	Result - Remark	Verdict
10.9	Conduit applications - Non-metallic		N/A
10.9.1	The thickness of sides, end walls, and bottom of a non-metallic wiring enclosure specified for conduit applications is not less than the values specified in Table 7 of IS/IEC61730-1.		N/A
10.9.2	A non-metallic wiring compartment intended to accommodate non-metallic conduit fulfils the following requirements:		—
	a) It has one or more unthreaded conduit- connection sockets;		N/A
	b) It has one or more threaded or unthreaded openings for a conduit-connection socket, or one or more knockouts that comply with the requirements of Knockout Test MST 44 of IS/IEC 61730-2;		N/A
	c) It complies with the Conduit Bending Test MST 33 of IS/IEC 61730-2, if intended for rigid non- metallic conduit.		N/A
10.9.3	Sockets for the connection of non-metallic conduit provide a positive end stop for the conduit.		N/A
	The socket diameters, the throat diameter at the entrance to the box, the socket depths, and the wall thickness of the socket are within the limits specified in the applicable conduit system.		N/A
10.9.4	A knockout or opening in a non-metallic wiring compartment intended to accommodate rigid non- metallic conduit complies with the dimensional requirements of the applicable conduit system.		N/A
Supplementary information: Nil			





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Clause	Requirement + Test	Result – Remark	Verdict
11	Marking		P
11.1	The module includes the following clear and indelible markings:		—
	Name, monogram or symbol of manufacturer	INTEGRATED BATTERIES INDIA PVT LTD 	P
	Type or model number	IBMPH-640	P
	Serial number	Marked	P
	Polarity of terminals or leads	Marked	P
	Maximum system voltage	1500V	P
	Safety class (IEC 61140)	Class II symbol marked	P
	The date and place of manufacture are marked on the module or are traceable from the serial number.	Marked	P
11.2	The following additional markings are applied to either the module or placed into the instruction and installation data (required documents).		-
	Voltage at open-circuit	Provided	P
	Current at short-circuit	Provided	P
	Maximum over-current protection rating, as verified by the Reverse Current Overload Test MST 26 of IS/IEC 61730-2	Provided	P
	Recommended maximum series/parallel module configurations	See installation manual	P
	Application class	Class A	P
	All electrical data are given relative to Standard Test Conditions (1000 W/m2 @ 25 °C)	Provided	P
11.3	Connectors suitable only for field assembly of modules are marked “Do not disconnect under load”.	Provided	P
11.4	For modules with open-circuit voltage in excess of 50 V, and/or modules rated for maximum system voltage in excess of 50 V, a highly visible warning label regarding the shock hazard is applied near the means of connection to the module.	Warning provided on the label	P
Supplementary information: Nil			





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Clause	Requirement + Test	Result – Remark	Verdict
12	Requirements for supplied documents		P
12.1	The module or panel is supplied with installation instructions describing the methods of electrical and mechanical installation and the electrical ratings of the module.	Provided	P
	The instructions state the application class under which the module was qualified and any specific limitations required for that application class.	Provided	P
12.2	When the fire rating is dependent on a specific mounting structure, specific spacing, or specific means of attachment to the roof or structure, details of the specific parameter or parameters are included in the instructions.	Provided	P
12.3	The electrical installation instructions include a detailed description of the wiring method.	Provided	P
	The description of the wiring method includes the following information:		—
	Grounding method	Provided	P
	Size, type, and temperature rating of the conductors	Provided	P
	Recommended maximum series/parallel module configurations	Provided	P
	Type of over-current protection and diode bypassing to be used	Fuse rating 30A provided, Diode provided with the module	P
	Minimum cable diameters when the wiring method is cable	Provided in installation manual	P
	Any limitations on wiring methods that apply to the wiring compartment or box	Cables are not interchangeable	P
12.4	The mechanical installation instructions for roof mounting include:		—
	A statement indicating the minimum mechanical means for securing the module or panel to the roof	Provided	P
	A statement that the assembly is to be mounted over a fire resistant roof covering rated for the application (only for non-integral modules or panels)	Provided	P
	Indication of any slope required for maintaining a fire class rating		N/A
12.5	The installation instructions include a statement advising that artificially concentrated sunlight shall not be directed on the module or panel.	Provided	P
12.6	Assembly instructions are provided with a product shipped in subassemblies, and are detailed and adequate to the degree required to facilitate total assembly of the product.	No subassemblies	N/A
12.7	The installation instructions include the proposed statement given in this Sub clause (or equivalent) to allow for increased output of the module resulting from certain conditions of use.	Provided	P
Supplementary information: Nil			





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A1.1	MODULE TYPE/S
	Model Tested: IBMPH-640

A1.2	MODULE DESIGN –DIMENSIONS
	Module dimensions (L x W x H) [mm].....: 2466 x 1135x 35 for 156 cell family 2278 x 1134 x 35 for 144 cell family

A1.3	SOLAR CELL
	Cell type reference.....: Primary: TN182A-R16D1, Monocrystalline Bifacial TOPCon Cell, Manufactured by: Solar N Plus New Energy Technology Co., Ltd
	Cell dimensions L x W x T (± %) [mm].....: Primary: 182mmx91mm (±0.5mm)
	Cell thickness [µm].....: Primary: 130µm (±13µm)
	Cell area [cm²].....: Primary: 165.62

A1.4	IDENTIFICATION OF MATERIALS
	Front cover.....: Primary: Low Iron Solar AR Coated Patterned Glass; Thickness: 2.0mm ± 0.2mm; Manufactured by: Borosil Renewables Limited Alternative: Low Iron Solar Anti-Reflective Coated Patterned Glass), Thickness: 2.0 mm ± 0.2 mm, Manufactured by: Triveni Renewables Pvt. Limited <i>Alternate Front cover having same strengthening process and same surface treatment and same material all technical details are same as the main model, only change in manufacturer name as per declared by manufacturer</i>
	Rear cover.....: Primary: Low Iron Solar AR Coated Patterned Glass; Thickness: 2.0mm ± 0.2mm; Manufactured by: Borosil Renewables Limited. Alternative: Low Iron Solar Anti-Reflective Coated Patterned Glass, Thickness: 2.0 mm ± 0.2 mm, Manufactured by: Triveni Renewables Pvt. Limited <i>Alternate Rear cover having same strengthening process and same surface treatment and same material all technical details are same as the main model, only change in manufacturer name as per declared by manufacturer</i>
	Encapsulation material.....: Primary: CONSERV P - 14 FC, Thickness: 0.45±5%, Width: upto 1240 mm, Manufactured by: Renewsys India Private Limited.





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		Alternative: ALISHAN FC, Manufactured by: Alishan Green Energy Pvt. Ltd Alternate Encapsulation material having same technical details as per declared by Manufacturer.
	Frame parts.....:	Primary: 6005 T6, Cross section: 35mm x 35 mm; Manufactured by Perfect Alex Pvt. Ltd. Alternative: DV-A-700, Cross section: 35mm x 35 mmManufactured by: Jiangsu Yuejia Metallic Technology Co.Ltd Alternate Frame having same technical details only change in manufacturer name as per declared by manufacturer
	Mounting parts.....:	as per installation manual
	Adhesive for frame.....:	Primary: 1527 Silicone Sealant For PV Modules, White colour; Manufactured by Tonsan Adhesive, Inc. Alternative: Manufactured by: Shanghai Huitian new material Co., Ltd Alternate Adhesives having same technical details only change in manufacturer name as per declared by manufacturer
	Cell connector.....:	Primary: Type: TPVIR2660, Sn60%/Pb40%, Dimensions [mm]: 0.26 mm; Manufactured by: VALEO PRODUCTS LLP Alternative: Manufactured by: VIDYA WIRES PVT LTD. Alternate cell connector having same technical details only change in manufacturer name as per declared by manufacturer.
	String connector.....:	Primary: Type: TPV1603580, Sn60%/Pb40%, Dimensions [mm]: 6x 0.35mm Manufactured by: Valeo Products LLP Alternative: Manufactured by: VIDYA WIRES PVT LTD. Alternate string connector having same technical details only change in manufacturer name as per declared by manufacturer.
	Fluxing agent.....:	Primary: 952-S, Low-Solids, No-Clean Liquid Flux, Manufactured by Kester
	Junction box.....:	Primary: GXSB-01, Rated voltage: 1.5KVDC, Rated Current: 45A, IP68, Ambient Temperature: -40°C to +85°C, Manufactured by GENX PV INDIA PRIVATE LIMITED. Certified by TUV SUD; certificate no.: B1157770002





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	Cable	Primary: 1X4mm ² , Electric Cables for Photovoltaic Systems for Rated Voltage 1500V d.c., for sizes upto and including 400 Sqmm, Conductor Class-5, Manufactured by APAR INDUSTRIES LTD (CM/L- 7100058704).
	Connector.....:	Primary: 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.....:	Primary: MK6045, T _j [°C]: -55 to +200°C, V _{RMS} : 45 V; I _{FSM} : 450A; R _{ΘJC} :1.2°C/W, VDC 45V, Manufactured by Genx Pv India Private Limited.
	Potting material.....:	Primary: 1521 Potting Materials, White colour; Manufactured by Tonsan Adhesive Inc. Alternative: Manufactured by: Shanghai Huitian new material Co., Ltd Alternate Potting material having same technical details only change in manufacturer name as per declared by manufacturer
	Adhesive for junction box.....:	Primary: 1527 Silicone Sealant For PV Modules, White colour; Manufactured by Tonsan Adhesive, Inc. Alternative: Manufactured by: Shanghai Huitian new material Co., Ltd Alternate Adhesives having same technical details only change in manufacturer name as per declared by manufacturer
	Soldering Material.....:	Primary: Alpha Telecore HF-850, Manufactured by: ALPHA Global
	Additional material (e. g. insulation tape)....:	N/A





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A1.5	MODULE DESIGN - MINIMUM DISTANCES	
	Between cells.....:	1.4 mm
	Between cell and edge of laminate.....:	17 mm
	Between any current carrying part and edge of laminate....:	15 mm

A1.6	MODULE DESIGN - ELECTRICAL CONFIGURATION	
	Total number of cells.....:	156 for 156 cell family 144 for 144 cell family
	Serial-parallel connection of cells.....:	78 cells in series and parallel connection:2 72 cells in series and parallel connection:2
	Cells per bypass diode.....:	52 for 156 cell family 48 for 144 cell family
	No. of bypass diodes.....:	3

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





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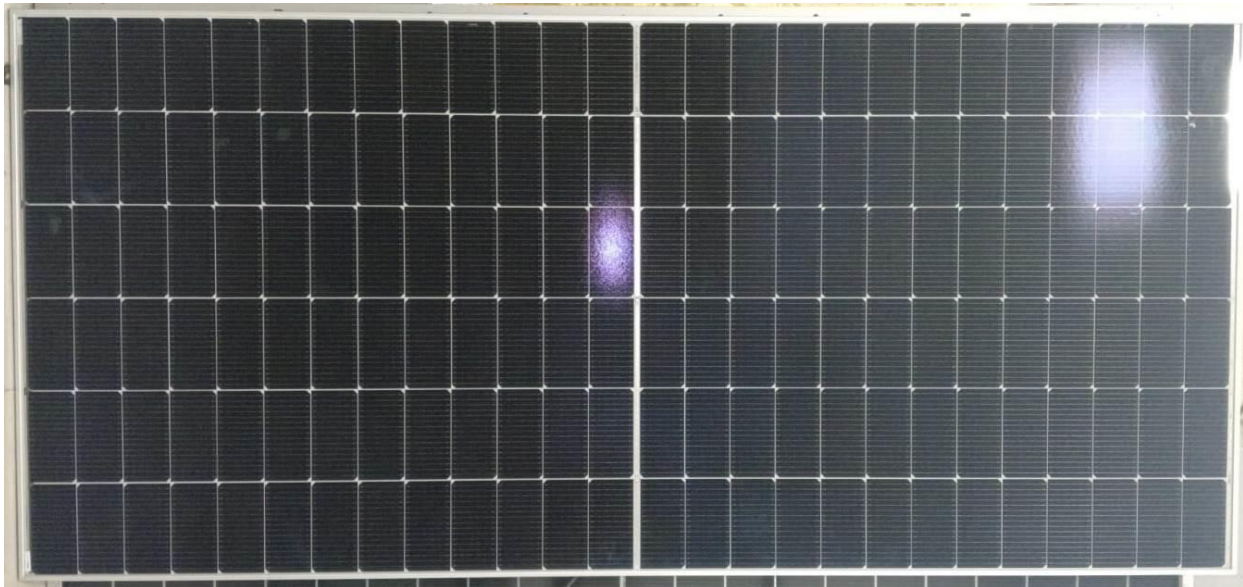
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ANNEX 2: PHOTOGRAPHS OF EUT



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 3: 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)		
156 Half cut cell family												
IBMPH-640	1500	56.12	46.65	14.51	13.72	640	30	2466	1135	35	156	52
IBMPH-635	1500	55.99	46.44	14.43	13.68	635	30	2466	1135	35	156	52
IBMPH-630	1500	55.86	46.27	14.35	13.62	630	30	2466	1135	35	156	52
IBMPH-625	1500	55.72	46.1	14.27	13.56	625	30	2466	1135	35	156	52
IBMPH-620	1500	55.58	45.93	14.19	13.5	620	30	2466	1135	35	156	52
IBMPH-615	1500	55.44	45.77	14.11	13.44	615	30	2466	1135	35	156	52
IBMPH-610	1500	55.31	45.6	14.03	13.38	610	30	2466	1135	35	156	52
IBMPH-605	1500	55.17	45.42	13.95	13.32	605	30	2466	1135	35	156	52
144 Half cut cell family												
IBMPH-600	1500	52.10	43.78	14.61	13.71	600	30	2278	1134	35	144	48
IBMPH-595	1500	51.90	43.61	14.53	13.64	595	30	2278	1134	35	144	48
IBMPH-590	1500	51.70	43.45	14.45	13.58	590	30	2278	1134	35	144	48
IBMPH-585	1500	51.50	43.27	14.36	13.52	585	30	2278	1134	35	144	48
IBMPH-580	1500	51.47	42.59	14.37	13.62	580	30	2278	1134	35	144	48
IBMPH-575	1500	51.27	42.44	14.31	13.55	575	30	2278	1134	35	144	48
IBMPH-570	1500	51.07	42.29	14.25	13.48	570	30	2278	1134	35	144	48
IBMPH-565	1500	50.87	42.14	14.19	13.41	565	30	2278	1134	35	144	48
IBMPH-560	1500	50.67	41.95	14.13	13.35	560	30	2278	1134	35	144	48
IBMPH-555	1500	50.49	41.78	14.06	13.28	555	30	2278	1134	35	144	48
IBMPH-550	1500	50.28	41.63	13.99	13.21	550	30	2278	1134	35	144	48

.....End of test report.....

