Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
PV 60186165 0001

Berichtsnummer *Report No.:*
IN2536K6 001

Genehmigungsinhaber *License Holder:*
SUNBOND ENERGY PRIVATE LIMITED (UNIT-2)
Survey No 270/P1-P2, NR. Onery Tiles,
Mitana – Neknam, Padadhari Road,
Tankara, Mitana, Morbi, Gujarat 363650
India

Fertigungsstätte *Manufacturing Site:*
SUNBOND ENERGY PRIVATE LIMITED (UNIT-2)
Survey No 270/P1-P2, NR. Onery Tiles,
Mitana – Neknam, Padadhari Road,
Tankara, Mitana, Morbi, Gujarat 363650
India

Prüfzeichen *Test Mark:*

TÜVRheinland CERTIFIED
Ammonia Resistance
Regular Production Surveillance
www.tuv.com
ID 1111312561

Geprüft nach *Tested according to:*
IEC 62716:2013
EN 62716:2013

Geräteidentifikation
Product Identification

Produkt: PV Module
Product:

Modell: Modelle sind auf nächste(r) Seite(n) gelistet
Type: *Type designation(s) are listed on the next page(s)*

Technische Daten:
Technical Data:

Gültig bis: 2031-02-03
Date of expiry:

Gültig ab: 2026-02-04
Valid from:

Ausstellungsdatum: 2026-02-04
Date of issue:

Zertifizierungsstelle:
Certification body:

Dipl.-Ing. A. Cox

TÜV Rheinland LGA Products GmbH TÜVRheinland Zertifizierungsstelle

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Das Produkt entspricht den o.g. Anforderungen, die Herstellung wird überwacht.
This certificate is based on our Testing and Certification Regulation. The product fulfills above mentioned requirements, the production is subject to surveillance.

TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg
http://www.tuv.com/safety E-mail: markcheck@tuv.com
Fax: +49 221 806-3935

Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
PV 60186165 0001

Berichtsnummer *Report No.:*
IN2536K6 001

Produkt *Product:* PV Module

Modell *Type:*

Bezeichnung *Designation:*

Type with monocrystalline M10R Topcon Bifacial half-cut solar cells:
SEPL16BGGN144-xxx (xxx = 570-595 in steps of 1, 144 cells)
SEPL16BGGN132-xxx (xxx = 520-545 in steps of 1, 132 cells)

Type with monocrystalline G12R Topcon Bifacial half-cut solar cells:
SEPLG12R132-xxx (xxx = 600-625 in steps of 1, 132 cells)

xxx represents power range in Wp

Remarks:
Valid in conjunction with TÜV Rheinland certificate acc. IEC 61730 and only for the material combination as listed in above written test report.

Conditions:
The product test is voluntarily according to technical regulations. Any change of the design, materials, components or processing may require the repetition of some of the qualification tests in order to retain type approval. Accordingly the repetition of the tests that are basis of this certificate may be required.

TÜV Rheinland LGA Products GmbH
TÜVRheinland
Zertifizierungsstelle

C E R T I F I C A T E

of Conformity
Low Voltage Directive (EU) 2014/35

Registration No.:	AN 60187789 0001
Report No.:	IN26OIVG 001
Holder:	SUNBOND ENERGY PRIVATE LIMITED (UNIT-2) Survey No 270/P1-P2, NR. Onery Tiles, Mitana – Neknam, Padadhari Road, Tankara, Mitana, Morbi, Gujarat 363650 India
Product:	PV Module

Type designation listed on the next page

This certificate of conformity is based on an evaluation of a sample of the above-mentioned product. Technical Report and documentation are at the License Holder's disposal. This is to certify that the tested sample is in conformity with Annex I of Council Directive (EU) 2014/35, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex IV of the Directive.

Certification Body

Date: 2026-05-19

Dipl.-Ing. A. Cox

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

The CE marking may be used if all relevant and effective EC Directives/Regulations are complied with.

C E R T I F I C A T E

of Conformity
Low Voltage Directive (EU) 2014/35

Registration No.: AN 60187789 0001

Product: PV Module

Identification: Type Designation

Type with monocrystalline M10R Topcon bifacial half-cut cells:
SEPL16BGGN144-xxx
(xxx = 570-595 in steps of 1, 144 cells)
SEPL16BGGN132-xxx
(xxx = 520-545 in steps of 1, 132 cells)

Type with monocrystalline G12R Topcon bifacial half-cut cells:
SEPLG12R132-xxx
(xxx = 600-625 in steps of 1, 132 cells)

xxx represents power range in Wp

TÜV Rheinland LGA Products GmbH
TÜVRheinland
Zertifizierungsstelle

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

The CE marking may be used if all relevant and effective EC Directives/Regulations are complied with.

Constructional Data Form for Photovoltaic Modules

Licence holder (full address)	Sunbond Energy Pvt Ltd. (UNIT -2) Survey No 270/P1-P2, NR. Onery Tiles, Mitana, – Neknam, Padadhari Road, Tankara, Mitana, Morbi, 363650, Gujarat				
Production factory -01 (full address)	Sunbond Energy Pvt Ltd. (UNIT -2) Survey No 270/P1-P2, NR. Onery Tiles, Mitana, – Neknam, Padadhari Road, Tankara, Mitana, Morbi, 363650, Gujarat				
Type of product	Photovoltaic (PV) modules				
Tested Standard	**IEC 61215:2021 and IEC 61730:2023**				
Trademark	SUNBOND Energy Pvt Ltd				
Type name or model no.	SEPLG12R132-xxx (xxx= 600-625wp nstep of 1)	SEPL16BGGN144-xxx (xxx = 570-595wp in step of 1)	SEPL16BGGN132-xxx (xxx=520-545wp in step of 1)		
Nominal maximum output power at STC [W]	600-625 In steps of 1	570- 595 In steps of 1	520-545 In steps of 1		
Nominal short-circuit current at STC [A]	15.66 – 15.96	13.67 – 13.97	13.65 – 13.95		
Nominal open-circuit voltage at STC [V]	47.59 – 48.34	51.95 – 52.70	47.61 – 48.36		
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3/±5/±5	±3/±5/±5	±3/±5/±5		
Nominal maximum output power at BNPI [W]	600 - 625	570 - 595	520 - 545		
Nominal short-circuit current at BNPI [A]	17.22 – 17.56	15.27 - 15.37	15.01 – 15.34		
Nominal open-circuit voltage at BNPI [V]	47.59 – 48.34	52.95 – 52.70	47.61 – 48.36		
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3/±5/±5	±3/±5/±5	±3/±5/±5		
Bifaciality coefficient	75± 10%	75± 10%	75± 10%		
Dimensions (L x W x H) [mm]	2382x1134x35	2278x1134x35	2093x1134x35		
Module area [m²]	2.70	2.58	2.38		
Class (IEC 61730-1:2016)	Class II	Class II	Class II		
Maximum system voltage [V_{DC}]	1500	1500	1500		
Pollution degree	PD1	PD1	PD1		

See digitally authenticated signature on last page (stamp and/or signature of TÜV Rheinland)	See digitally authenticated signature on last page (stamp and/or signature of applicant)
Note: Any errors or omissions in the CDF shall be reported to TÜV Rheinland immediately upon receipt by the applicant.	

Constructional Data Form for Photovoltaic Modules

Qualified as cemented joint design	No	No	No		
Over-current protection rating [A]	30	30	35		
Defined min. creepage distance [mm]	13	13	13		
Defined min. clearance distance [mm]	13	13	13		
Max. operational altitude [masl]	≤2000	≤2000	≤2000		
Design load – downwards [Pa]	3600	3600	3600		
Design load – upwards [Pa]	1600	1600	1600		
Safety factor for mechanical load	1.5	1.5	1.5		
Number of solar cells	132	144	132		
Connection of cells (S, SP, PS)	SP	SP	SP		
Number of diodes	3	3	3		
Cells per diode	44	48	44		

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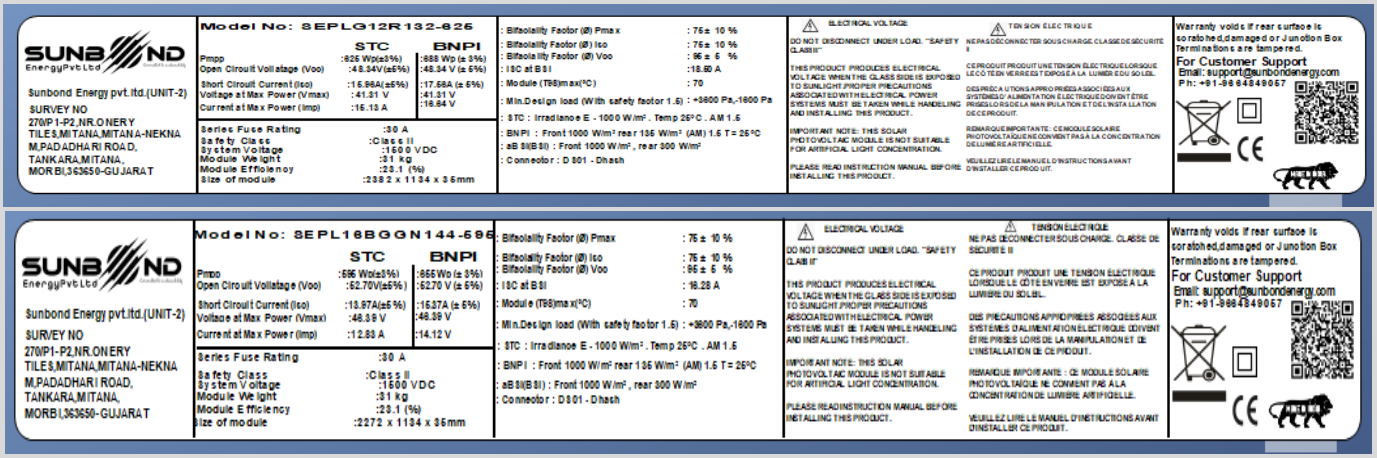
Constructional Data Form for Photovoltaic Modules

Copy of marking plate



Marking plate is in compliance with IEC 61215:2021 and IEC 61730:2023.

(Place, date and/or signature of TÜV Rheinland) See digitally authenticated signature on last page	(Place, date and/or signature of applicant) See digitally authenticated signature on last page

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Constructional Data Form for Photovoltaic Modules

List of critical components (add lines for multiple material sources)

Object	Manufacturer	Type / model	Technical data / ratings	Standard (if applicable)	Certificates (if applicable)
Solar Cell 1	Huai'an Jietai New Energy Technology Co., Ltd	F186R192	N -type Topcon - 16BB 182.3 x 105±0.5mm, 130±13µm Power classes [W]:9.74	—	Tested in appliance
Solar Cell 2	Sunsync solar Technology (YIBIN) Co., Ltd	HG183T216D	N -type Topcon - 16BB 182.2x91.8±0.5mm, 130±10µm Power classes [W]:8.54	—	Tested in appliance
Solar Cell 3	Sunsync solar Technology (YIBIN) Co., Ltd	HG210RT216A	N -type Topcon - 16BB 182.3 x 105 ± 0.5, 130±10µm Power classes [W]:8.54	—	Tested in appliance
Front cover 1	Wujiang CSG Glass Co., Ltd	AR coated low iron Semi tempered pattern glass	Thickness = 2.0±0.2mm Surface treatment: AR Coated patterned Solar glass Transmission data: ≥ 93.5%	---	Tested in appliance
Front cover 2	Borosil Renewables Limited	AR coated low iron Semi tempered pattern glass	Thickness = 2.0±0.2mm Surface treatment: AR Coated patterned Solar glass Transmission data: ≥ 93.5%	---	Tested in appliance
Backside cover 1	Wujiang CSG Glass Co., Ltd	Low iron tempered pattern glass	Thickness = 2.0±0.2mm Surface treatment: AR Coated patterned Solar glass Transmission data: ≥ 91.5%	---	Tested in appliance
Backside cover 2	Borosil Renewables Limited	Low iron tempered pattern glass	Thickness = 2.0±0.2mm Surface treatment: AR Coated patterned Solar glass Transmission data: ≥ 91.5%	---	Tested in appliance
Cell connector	Shanghai Sunby Solar Technology Co., Ltd.	-	Dimensions[mm]: Ø:0.32±0.03 Ø:0.26±0.03, Composition of alloy: Sn60Pb40	—	Tested in appliance
	Xi'an Telison New Materials Co, Ltd	-	Dimensions[mm]: Ø:0.32±0.03 Ø:0.26±0.03, Composition of alloy: Sn60Pb40	—	Tested in appliance
	A B Industries - (NEOCAB-PV)	-	Dimensions[mm]: Ø:0.32±0.03 Ø:0.26±0.03, Composition of alloy: Sn60Pb40		Tested in appliance
String connector	Shanghai Sunby Solar Technology Co., Ltd.	-	Dimensions[mm]: 4.00±1.00mm x 0.35±0.03mm 6.00±1.00mm x 0.35±0.03mm Composition of alloy: Sn60Pb40	—	Tested in appliance
	Xi'an Telison New Materials Co, Ltd	-	Dimensions[mm]: 4.00±1.00mm x 0.35±0.03mm 6.00±1.00mm x 0.35±0.03mm Composition of alloy: Sn60Pb40	—	Tested in appliance
	A B Industries - (NEOCAB-PV)	-	Dimensions[mm]: 4.00±1.00mm x 0.35±0.03mm 6.00±1.00mm x 0.35±0.03mm Composition of alloy: Sn60Pb40	—	Tested in appliance

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Constructional Data Form for Photovoltaic Modules

Soldering material 1	DL Industries	DL 60/40	Composition: Sn60/Pb40	—	Tested in appliance
Fluxing agent 1	Shenzhen Embrace Glory Electronics Material Co.Ltd	FLUX 8000T20	Liquid flux	—	Tested in appliance
Cell fixing tape 1	Cybrid Technologies Inc	FF-3665	Dimensions [mm]: 10mm Article/specification no.: T75	—	Tested in appliance
Cell fixing tape 2	Tesa Tapes (india) Pvt. Ltd.	Tesa-7946	Dimensions [mm]: 10mm Article/specification no.:7946	—	Tested in appliance
Junction box 1	DhaSh PV Technologies Private Limited	DSJB12y(y=d)	Max. Voltage = 1500V Max Current = 35A Upper Limiting temp:110°C	IEC 62790:2020	R 50680381 001
Bypass diode 1	SMC Diode Solutions	DS6045T	Tj max = 200°C Max. diode current [A]: 60	—	Tested in appliance
Cable 1	DhaSh PV Technologies Private Limited	62930 IEC 131 1 x 4mm2	Max. Voltage = 1500VDC Max. Temp = 120°C	IEC 62930:2017	R 50520444
Cable 2	Vindhya Telelinks Limited	62930 IEC 131 1 x 4mm2	Max. Voltage = 1500VDC Max. Temp = 120°C	IEC 62930:2017	R 50500939
Cable 3	Apar Industries Limited	62930 IEC 131 1 x 4mm2	Max. Voltage = 1500VDC Max. Temp = 120°C	IEC 62930:2017	R 60152490
Connector 1	DhaSh PV Technologies Private Limited	DS01	Max. Voltage = 1500VDC Max. Current =35A Max Temp = 100°C	IEC 62852: 2014+AMD1: 2020	R 60152493
Connector 2	DhaSh PV Technologies Private Limited	DS01a	Max. Voltage = 1500VDC Max. Current = 45A Max Temp = 100°C	IEC 62852: 2014+AMD1: 2020	R 50678237
Connector 3	Staubli Electrical Connectors AG.	PV-KST4-EVO 2A/xy-M PV-KBT4-EVO 2A/xy-F	Max. Voltage = 1500VDC Max. Current = 45A Max Temp = 100°C	IEC 62852: 2014+AMD1: 2020	R 60127169
Adhesive 1 (junction box)	Adarsha Specialty Chemicals Pvt Ltd	ADSIL PV 555	Silicone Adhesive Sealant	-	Tested in appliance
Adhesive 2 (junction box)	Shanghai Huitian New Material Co., Ltd	HT906Z	Silicone Adhesive Sealant	-	Tested in appliance
Potting material 1 (junction box)	Adarsha Specialty Chemicals Pvt Ltd	ADSIL JB 597	Silicone potting compound	-	Tested in appliance
Potting material 2 (junction box)	Shanghai Huitian New Material Co., Ltd	5299W-S	Silicone potting compound	-	Tested in appliance
Encapsulation material 1	Cybrid Technologies Inc	Cybright T22H(Front)	Thickness [mm]: 0.50±0.1 CTI: ≥ 600 Max. Storage temp[°C]: 30 Max. shelf life: 9months	-	Tested in appliance
		Cybright C22H(Back)		-	Tested in appliance
Encapsulation material 2	Alishan Green Energy Pvt. Ltd.	Alishan EPE(Front)	Thickness [mm]: 0.50±0.1 CTI: ≥ 600 Max. Storage temp[°C]: 30 Max. shelf life: 9months		Tested in appliance
		Alishan EPE(Back)			Tested in appliance

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Constructional Data Form for Photovoltaic Modules

Frame parts 1	Anhui Krant Aluminum Products Co., Ltd	Anodized Aluminium	Material: AL6005, T6 Dimension: 35mm Drg.No: KTFT901	-	Tested in Appliance
Frame parts 2	Jiangsu Dinghao Aluminum Technology co., Ltd	Anodized Aluminium	Material: AL6005, T6 Dimension: 35mm Drg.No: TYN0761		Tested in Appliance
Adhesive (frame) 1	Shanghai Huitian New Material Co., Ltd	HT906Z	Silicone Adhesive Sealant	-	Tested in appliance
Adhesive (frame) 2	Adarsha Specialty Chemicals Pvt Ltd	ADSIL PV 555	Silicone Adhesive Sealant	-	Tested in appliance
Mounting and attachment parts	N/A	N/A	N/A	—	Tested in appliance
Markings	Strength Bartech		Back label	—	Tested in appliance
Ink	Strength Bartech	-	-	—	—
Additional materials	-			—	Tested in appliance
(Optional) Accessories	-	-	-	—	Tested in appliance
Remarks	None				

(Pl... ...or signature of TÜV Rheinland)	(Pl... (stamp and/or signature of applicant)

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Constructional Data Form for Photovoltaic Modules

Qualified material combinations				
	Encapsulation material 1 Cybright T22H(Front) Cybright C22H(Back) (Cybrid Technologies Inc)	Encapsulation material 2 Alishan EPE(Front) Alishan EPE(Back) (Alishan Green)		
Solar cell 1 F186R192 Huai'an Jietai	✓			
Solar cell 2 HG183T216D Sunsync solar	✓			
Solar cell 3 HG210RT216A Sunsync solar		✓		
Backside cover 1 Glass -2mm (Wujiang CSG Glass)	✓	✓		
Backside cover 2 Glass -2mm (Borosil Renewables)	✓	✓		
Soldering material 1 DL 60/40 DL Industries	✓	✓		
Fluxing agent 1 FLUX 8000T20 Shenzhen Embrace Glory	✓	✓		
Cell fixing tape 1 FF-3665(Cybrid)	✓	✓		
Adhesive (frame) 1 ADSIL PV 555 (Adarsha Specialty)	✓	✓		
Adhesive (frame) 2 HT906Z (Shanghai Huitian New Material Co., Ltd)	✓	✓		
Remarks				

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Note: Any errors or omissions in the CDF shall be reported to TÜV Rheinland immediately upon receipt by the applicant.

Constructional Data Form for Photovoltaic Modules

Qualified material combinations				
Junction box 1 DSJB12d (DhaSh PV Technologies)	Adhesive (JB) 2 ADSIL PV 555 (Adarsha Specialty)	Adhesive (JB) 1 HT906Z (Shanghai Huitian)		
Backside cover 1 Glass -2mm (Wujiang CSG Glass)	✓	✓		
Backside cover 2 Glass -2mm (Borosil Renewables)	✓	✓		
Bypass diode	Bypass diode 1			
Cable	Cable 1,2,3			
Connector	Connector 1,2,3			
Potting	Potting 1,2			
Remarks	None			

(Place and/or signature of TÜV Rheinland)	(stamp and/or signature of applicant)

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Note: Any errors or omissions in the CDF shall be reported to TÜV Rheinland immediately upon receipt by the applicant.

Constructional Data Form for Photovoltaic Modules

Routine Safety Testing:

Required: ☒ **Not Required:** ☐ ***Reason:*** ***Class III product:*** ☐ ***Other:***

Test Details: ***Please select the required tests***	**Test Points:** ***e.g., edit or delete as needed***	**Test Values:**
☒ **High potential test:**	**Module terminals vs. glass edge/frame**	**100% sampling size,** **4800 kV for 2 sec, 0.25 mA (max)**
☒ **Continuity test of equipotential bonding:**	**Module terminals vs. glass edge/frame**	**100% sampling size,** **75 A for 6 sec, 100 mΩ (max)**
☒ **Insulation resistance:**	**Module terminals vs. glass edge/frame**	**100%,** **1500 kV for 5 sec, >40 MΩ m² (min)**
☒ **Wet leakage current test:**	**Module terminals vs. glass edge/frame**	**2 no's/shift sampling size,** **1500 kV for 120 sec, >40 MΩ m²(min)**
☒ **Visual inspection:**	**Front and rear side of modules**	**100% sampling size,** **criteria catalogue file Annexure -A08**
☒ **Bypass diode functionality:**	**Module terminals**	**100% sampling size,** **method B.**
☒ **Module output power:**	**Module terminals**	**100% sampling size,** **1000 W/m², 25 °C, AM1.5**
☐ **Other:**		

TÜV Rheinland (India) Pvt. Ltd. Bangalore - 560 100

Digitally signed by Ganesh Kamath

(stamp and/or signature of TÜV Rheinland)

MORBI (Place) 05 Dec - 2025 (date)

ORIENT GREEN ENERGY PVT. LTD. MITANA

(stamp and/or signature of applicant)

Note: Any errors or omissions in the CDF shall be reported to TÜV Rheinland immediately upon receipt by the applicant.

TÜVRheinland®

Date: 2026-02-10

SUNBOND ENERGY PRIVATE LIMITED (UNIT-2)
Survey No 270/P1-P2, NR. Onery Tiles,
Mitana – Neknam, Padadhari Road,
Tankara, Mitana, Morbi, Gujarat 363650
India

Ref: CU US + Canada Certificate

Type of Equipment	:	Photovoltaic (PV) module
Certificate No.	:	CU 72505287 0001
Report No.	:	IN25PFXM 001
Engineer/Contact	:	Volker Ebinghaus
Standards	:	UL 61215-1:2021 UL 61215-1-1:2021 UL 61215-2:2021 UL 61730-1:2022 UL 61730-2:2022 CSA C22.2 No. 61730-1:19 CSA C22.2 No. 61730-2:19

Dear Madame or Sir,

The above referenced technical equipment has been tested and was found to be in compliance with the listed test requirement(s). Enclosed, please find the TUV Rheinland approval document No. CU 72505287 0001.
It authorizes you to label the listed product(s) with the TUV Rheinland Mark identified in the approval document. For compliance, the Test Mark must be on the approved unit.

Your product is subject to regular factory follow-up inspections as well as annual certificate and factory registration fees.

In using the TUV Rheinland Mark you are obligated to comply with the TUV Rheinland of North America Service Agreement.

If we can be of any further assistance to you, please do not hesitate to contact us.

With kind regards,

Certification Body

Dipl.-Ing. A. Cox

Enclosure

Certificate

Certificate no. CU 72505287 0001

License Holder:

SUNBOND ENERGY PRIVATE LIMITED (UNIT-2)
Survey No 270/P1-P2, NR. Onery Tiles,
Mitana – Neknam, Padadhari Road,
Tankara, Mitana, Morbi, Gujarat 363650
India

Manufacturing Plant:

SUNBOND ENERGY PRIVATE LIMITED (UNIT-2)
Survey No 270/P1-P2, NR. Onery Tiles,
Mitana – Neknam, Padadhari Road,
Tankara, Mitana, Morbi, Gujarat 363650
India

Report Number: IN25PFXM 001

Client Reference:

Certification acc. to:
UL 61215-1:2021
UL 61215-1-1:2021
UL 61215-2:2021
UL 61730-1:2022
UL 61730-2:2022
CSA C22.2 No. 61730-1:19
CSA C22.2 No. 61730-2:19

Product Information

Certified Product: Photovoltaic (PV) module

Model Designation:
Type with monocrystalline M10R Topcon Bifacial half-cut cells:
SEPL16BGGN144-xxx (xxx = 570-595 in steps of 1, 144 cells)
SEPL16BGGN132-xxx (xxx = 520-545 in steps of 1, 132 cells)
Type with monocrystalline G12R Topcon Bifacial half-cut cells:
SEPLG12R132-xxx (xxx = 600-625 in steps of 1, 132 cells)
xxx represents power range in Wp

Technical Data: Max. System Voltage: 1500 V DC

Remarks:
Class II acc. to IEC 61140
Max. positive Design Load (downward): 3600 Pa
Max. negative Design Load (upward): 1600 Pa
with safety factor 1.5

Appendix: CDF IN25PFXM 001

Date of issue: 2026-02-10
(yr/mo/day)

TUV Rheinland of North America, Inc.
400 Beaver Brook Rd, Boxborough, MA 01719
Tel +1 (978) 266 9500, Fax +1 (978) 266-9992

Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
PV 60186146 0001

Berichtsnummer *Report No.:*
IN25CMZA 001

Genehmigungsinhaber *License Holder:*
SUNBOND ENERGY PRIVATE LIMITED (UNIT-2)
Survey No 270/P1-P2, NR. Onery Tiles,
Mitana – Neknam, Padadhari Road,
Tankara, Mitana, Morbi, Gujarat 363650
India

Fertigungsstätte *Manufacturing Site:*
SUNBOND ENERGY PRIVATE LIMITED (UNIT-2)
Survey No 270/P1-P2, NR. Onery Tiles,
Mitana – Neknam, Padadhari Road,
Tankara, Mitana, Morbi, Gujarat 363650
India

Prüfzeichen *Test Mark:*

TÜVRheinland CERTIFIED
IEC 61215
IEC 61730
Regular Production Surveillance
www.tuv.com
ID 1111312439

Geprüft nach *Tested according to:*
IEC 61215-1:2021
IEC 61215-1-1:2021
IEC 61215-2:2021
IEC 61730-1:2023
IEC 61730-2:2023
EN IEC 61215-1:2021
EN IEC 61215-1-1:2021
EN IEC 61215-2:2021
EN IEC 61730-1:2018
EN IEC 61730-2:2018

Geräteidentifikation
Product Identification

Produkt: PV Module
Product:

Modell: Modelle sind auf nächste(r) Seite(n) gelistet
Type: *Type designation(s) are listed on the next page(s)*

Technische Daten: `Max. System Voltage: 1500 V DC`
Technical Data:

Gültig bis: 2031-01-14
Date of expiry:

Gültig ab: 2026-01-21
Valid from:

Ausstellungsdatum: 2026-01-21
Date of issue:

Zertifizierungsstelle:
Certification body:

TÜV Rheinland LGA Products GmbH TÜVRheinland Zertifizierstelle

Dipl.-Ing. A. Cox

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Das Produkt entspricht den o.g. Anforderungen, die Herstellung wird überwacht.
This certificate is based on our Testing and Certification Regulation. The product fulfills above mentioned requirements, the production is subject to surveillance.

TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg
http://www.tuv.com/safety E-mail: markcheck@tuv.com
Fax: +49 221 806-3935

Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
PV 60186146 0001

Berichtsnummer *Report No.:*
IN25CMZA 001

Produkt *Product:* PV Module

Modell *Type:*

Bezeichnung *Designation:*

Type with monocrystalline M10R Topcon Bifacial half-cut solar cells:
SEPL16BGGN144-xxx (xxx = 570-595 in steps of 1, 144 cells)
SEPL16BGGN132-xxx (xxx = 520-545 in steps of 1, 132 cells)

Type with monocrystalline G12R Topcon Bifacial half-cut solar cells:
SEPLG12R132-xxx (xxx = 600-625 in steps of 1, 132 cells)

xxx represents power range in Wp

Remarks:
Class II acc. to IEC 61140
Max. positive Design Load (downward): 3600 Pa
Max. negative Design Load (upward): 1600 Pa
with safety factor 1.5

Conditions:
The product test is voluntarily according to technical regulations. Any change of the design, materials, components or processing may require the repetition of some of the qualification tests in order to retain type approval.

TÜV Rheinland LGA Products GmbH
TÜVRheinland
Zertifizierungsstelle

Ref. Certif. No.
DE 2-046628

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Photovoltaic (PV) modules
Name and address of the applicant	SUNBOND ENERGY PRIVATE LIMITED (UNIT-2) Survey No 270/P1-P2, NR. Onery Tiles, Mitana – Neknam, Padadhari Road, Tankara, Mitana, Morbi, Gujarat 363650, India
Name and address of the manufacturer	SUNBOND ENERGY PRIVATE LIMITED (UNIT-2) Survey No 270/P1-P2, NR. Onery Tiles, Mitana – Neknam, Padadhari Road, Tankara, Mitana, Morbi, Gujarat 363650, India
Name and address of the factory Note: *When more than one factory, please report on page 2*	SUNBOND ENERGY PRIVATE LIMITED (UNIT-2) Survey No 270/P1-P2, NR. Onery Tiles, Mitana – Neknam, Padadhari Road, Tankara, Mitana, Morbi, Gujarat 363650, India
Ratings and principal characteristics	Pmax=570-595Wp for SEPL16BGGN144-xxx Pmax=520-545Wp for SEPL16BGGN132-xxx Pmax=600-625Wp for SEPLG12R132-xxx Maximum System Voltage: 1500 V DC
Trademark / Brand (if any)	SUNBOND
Customer's Testing Facility (CTF) Stage used	N/A
Model / Type Ref.	SEPL16BGGN144-xxx (xxx=570-595 in steps of 1, 144 cells) SEPL16BGGN132-xxx (xxx=520-545 in steps of 1, 132 cells) SEPLG12R132-xxx (xxx=600-625 in steps of 1, 132 cells)
Additional information (if necessary may also be reported on page 2)	N/A
A sample of the product was tested and found to be in conformity with	IEC 61730-2:2023 IEC 61730-1:2023
As shown in the Test Report Ref. No. which forms part of this Certificate	IN26V47H 001

This CB Test Certificate is issued by the National Certification Body

TÜVRheinland®

TÜV Rheinland LGA Products GmbH
Tillystr. 2, 90431 Nürnberg, Germany
Mail: cert-validity@de.tuv.com

Date: 2026-04-20

Signature: Dipl.-Ing. A. Cox

10/061SMD 2024-12 rke-simplified

	Ref. Certif. No.
	DE 2-046627

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Photovoltaic (PV) modules
Name and address of the applicant	SUNBOND ENERGY PRIVATE LIMITED (UNIT-2) Survey No 270/P1-P2, NR. Onery Tiles, Mitana – Neknam, Padadhari Road, Tankara, Mitana, Morbi, Gujarat 363650, India
Name and address of the manufacturer	SUNBOND ENERGY PRIVATE LIMITED (UNIT-2) Survey No 270/P1-P2, NR. Onery Tiles, Mitana – Neknam, Padadhari Road, Tankara, Mitana, Morbi, Gujarat 363650, India
Name and address of the factory Note: *When more than one factory, please report on page 2*	SUNBOND ENERGY PRIVATE LIMITED (UNIT-2) Survey No 270/P1-P2, NR. Onery Tiles, Mitana – Neknam, Padadhari Road, Tankara, Mitana, Morbi, Gujarat 363650, India
Ratings and principal characteristics	Pmax=570-595Wp for SEPL16BGGN144-xxx Pmax=520-545Wp for SEPL16BGGN132-xxx Pmax=600-625Wp for SEPLG12R132-xxx Maximum System Voltage: 1500 V DC
Trademark / Brand (if any)	SUNBOND
Customer's Testing Facility (CTF) Stage used	N/A
Model / Type Ref.	SEPL16BGGN144-xxx (xxx=570-595 in steps of 1, 144 cells) SEPL16BGGN132-xxx (xxx=520-545 in steps of 1, 132 cells) SEPLG12R132-xxx (xxx=600-625 in steps of 1, 132 cells)
Additional information (if necessary may also be reported on page 2)	N/A
A sample of the product was tested and found to be in conformity with	IEC 61215-2:2021 IEC 61215-1:2021 IEC 61215-1-1:2021
As shown in the Test Report Ref. No. which forms part of this Certificate	IN26D9NQ 001

This CB Test Certificate is issued by the National Certification Body

TÜVRheinland®

TÜV Rheinland LGA Products GmbH
Tillystr. 2, 90431 Nürnberg, Germany
Mail: cert-validity@de.tuv.com

Date: 2026-04-20

Signature: Dipl.-Ing. A. Cox

10/061SMD 2024-12 rke-simplified

PV module - SEPL16BGGN144-595

Manufacturer	Sunbond Energy	**Commercial data**	
Model	SEPL16BGGN144-595	Data source :	TUV Rheinland India Pvt Ltd
Pnom STC power (manufacturer)	595 Wp	Technology	Si-mono
Module size (W x L)	1.134 x 2.278 m²	Rough module area (Amodule)	2.58 m²
Number of cells	2 x 72	Sensitive area (cells) (Acells)	2.41 m²

Specifications for the model (manufacturer or measurement data)

Reference temperature (TRef)	25 °C	Reference irradiance (GRef)	1000 W/m²
Open circuit voltage (Voc)	52.7 V	Short-circuit current (Isc)	13.97 A
Max. power point voltage (Vmpp)	46.4 V	Max. power point current (Impp)	12.83 A
=> maximum power (Pmpp)	595.2 W	Isc temperature coefficient (muIsc)	8.0 mA/°C

One-diode model parameters

Shunt resistance (Rshunt)	200 Ω	Diode saturation current (IoRef)	0.015 nA
Serie resistance (Rserie)	0.09 Ω	Voc temp. coefficient (MuVoc)	-124 mV/°C
Specified Pmax temper. coeff. (muPMaxR)	-0.26 %/°C	Diode quality factor (Gamma)	1.03
		Diode factor temper. coeff. (muGamma)	0.000 1/°C

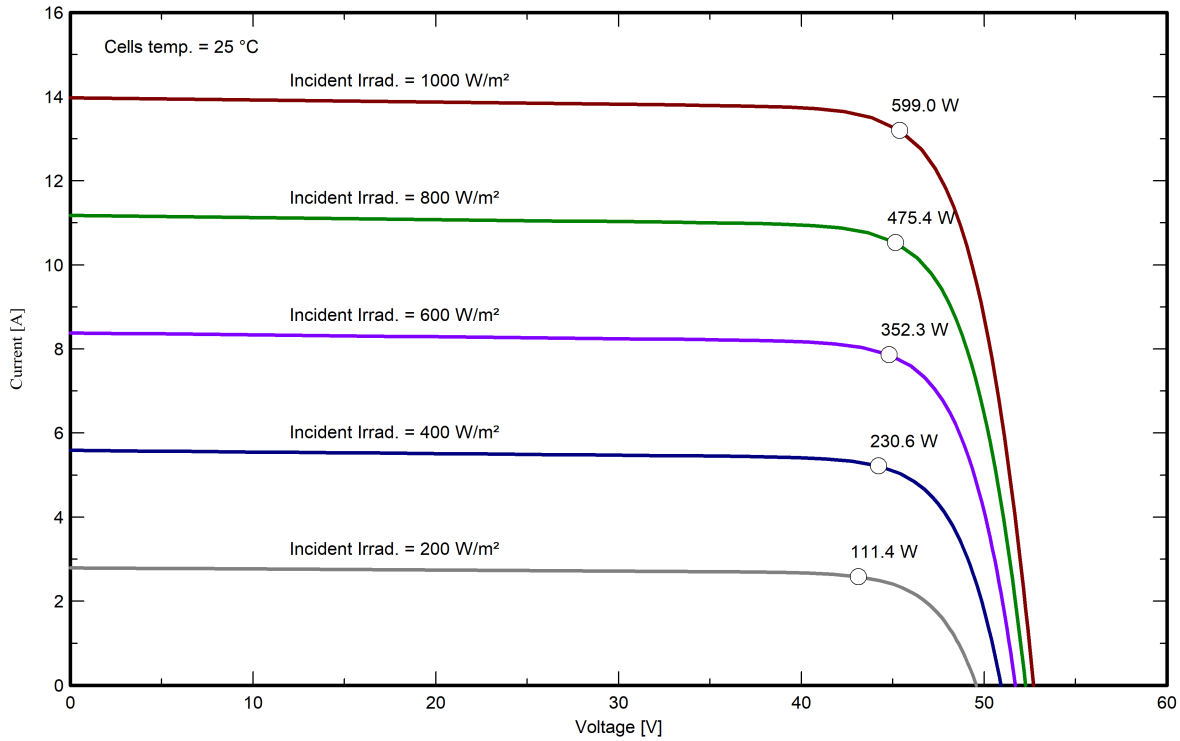
Reverse Bias Parameters, for use in behaviour of PV arrays under partial shadings or mismatch

Reverse characteristics (dark) (BRev)	3.20 mA/V²	(quadratic factor (per cell))	
Number of by-pass diodes per module	3	Direct voltage of by-pass diodes	-0.7 V

Model results for standard conditions (STC: T=25 °C, G=1000 W/m², AM=1.5)

Max. power point voltage (Vmpp)	45.4 V	Max. power point current (Impp)	13.32 A
Maximum power (Pmpp)	599.0 Wp	Power temper. coefficient (muPmpp)	-0.26 %/°C
Efficiency(/ Module area) (Eff_mod)	23.2 %	Fill factor (FF)	0.814
Efficiency(/ Cells area) (Eff_cells)	24.8 %		

PV module: Sunbond Energy, SEPL16BGGN144-595



CIN: U72501KA1996PTC020653
Business Stream Products
Business Field Solar & Commercial Products

Bangalore, 18 March 2026

TUV Rheinland (India) Pvt. Ltd.
Bangalore-560100

Sunbond Energy Pvt Ltd. (UNIT -2)
Survey No 270/P1-P2, NR. Onery Tiles, Mitana, Mitana – Neknam, Padadhari Road, Tankara, Mitana, Morbi, 363650, Gujarat

Declaration on PID Test:

No. IN26A1KG 001

Manufacturer:
Sunbond Energy Pvt Ltd. (UNIT -2)
Survey No 270/P1-P2, NR. Onery Tiles, Mitana, Mitana – Neknam, Padadhari Road, Tankara, Mitana, Morbi, 363650, Gujarat

Product: Photovoltaic Module

Type: SEPL16BGGN144-xxx (xxx =570-595Wp in step of 1 with 144 cut cells)
SEPL16BGGN132-xxx (xxx =520-545Wp in step of 1 with 132 cut cells)

Only Valid with the tested components:

Solar Cell: 16bb Mono-crystalline Bifacial TOPCon Solar cell, by Sunsync solar Technology (YIBIN) Co., Ltd
Front cover: AR coated low iron tempered pattern glass by Wujiang CSG Glass Co., Ltd - 2mm
Encapsulant: Cybright T22H (Front): Cybright C22H (Back) by Cybrid Technologies Inc
Back cover: AR coated low iron tempered pattern glass by Wujiang CSG Glass Co., Ltd - 2mm

Test Results:

- **All tested specimens have fulfilled the test criteria and passed the performed PID test with 288 hrs (3 cycles of 85°C & 85%RH for 96 hrs) with -1500V as per IEC TS 62804-1**
- **The degradation of maximum output power does not exceed 5%.**
- **There is no evidence of major local degradation in electroluminescence inspection.**

Akshay Shetty
Engineer-Products (S & C)

K. Ganesh Kamath
Sr.Manager-Products (S & C)

Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
PV 60186204 0001

Berichtsnummer *Report No.:*
IN251ERT 001

Genehmigungsinhaber *License Holder:*
SUNBOND ENERGY PRIVATE LIMITED (UNIT-2)
Survey No 270/P1-P2, NR. Onery Tiles,
Mitana – Neknam, Padadhari Road,
Tankara, Mitana, Morbi, Gujarat 363650
India

Fertigungsstätte *Manufacturing Site:*
SUNBOND ENERGY PRIVATE LIMITED (UNIT-2)
Survey No 270/P1-P2, NR. Onery Tiles,
Mitana – Neknam, Padadhari Road,
Tankara, Mitana, Morbi, Gujarat 363650
India

Prüfzeichen *Test Mark:*

TÜVRheinland® CERTIFIED
Salt Mist Resistance
Regular Production Surveillance
www.tuv.com
ID 1111312630

Geprüft nach *Tested according to:*
IEC 61701:2020
EN IEC 61701:2020

Geräteidentifikation
Product Identification

Produkt: PV Module
Product:

Modell: Modelle sind auf nächste(r) Seite(n) gelistet
Type: *Type designation(s) are listed on the next page(s)*

Technische Daten:
Technical Data:

Gültig bis: 2031-02-03
Date of expiry:

Gültig ab: 2026-02-04
Valid from:

Ausstellungsdatum: 2026-02-04
Date of issue:

Zertifizierungsstelle:
Certification body:

Dipl.-Ing. A. Cox

TÜV Rheinland LGA Products GmbH TÜVRheinland® Zertifizierungsstelle

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Das Produkt entspricht den o.g. Anforderungen, die Herstellung wird überwacht.
This certificate is based on our Testing and Certification Regulation. The product fulfills above mentioned requirements, the production is subject to surveillance.

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Fax: +49 221 806-3935

Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
PV 60186204 0001

Berichtsnummer *Report No.:*
IN251ERT 001

Produkt *Product:* PV Module

Modell *Type:*

Bezeichnung *Designation:*

Type with monocrystalline M10R Topcon Bifacial half-cut solar cells:
SEPL16BGGN144-xxx (xxx = 570-595 in steps of 1, 144 cells)
SEPL16BGGN132-xxx (xxx = 520-545 in steps of 1, 132 cells)

Type with monocrystalline G12R Topcon Bifacial half-cut solar cells:
SEPLG12R132-xxx (xxx = 600-625 in steps of 1, 132 cells)

xxx represents power range in Wp

Remarks:
Valid in conjunction with TÜV Rheinland certificate
acc. IEC 61730 and only for the material combination
as listed in above written test report.
Test performed with test method 6 acc. to IEC 60068-2-52.

Conditions:
The product test is voluntarily according to technical
regulations. Any change of the design, materials, components
or processing may require the repetition of some of the
qualification tests in order to retain type approval.
Accordingly the repetition of the tests that are basis of
this certificate may be required.

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