Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
PV 50684924 0003

Berichtsnummer *Report No.:*
CN25T6WR 004

Genehmigungsinhaber *License Holder:*
GCL System Integration Technology
Co., Ltd.
Jianghai Economic Zone,
Nanqiao Town, Fengxian District
201406 Shanghai
P.R. China

Fertigungsstätte *Manufacturing Site:*
3 Fertigungsstätten auf Folgeseiten
Listing of 3 factories on following pages

Prüfzeichen *Test Mark:*



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: Class II acc. to IEC 61140
Technical Data: For other ratings, refer to the test report.

Gültig bis: 2029-01-22
Date of expiry:

Gültig ab: 2026-03-17
Valid from:

Ausstellungsdatum: 2026-03-17
Date of issue:

Zertifizierungsstelle:
Certification body:

Angela Yao

TÜV Rheinland LGA Products GmbH
TÜVRheinland
Zertifizierungsstelle

® TÜV, TUEV and TUV are registered trademarks. Utilisatio n and applic ation requires prior approval.

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 50684924 0003

Berichtsnummer *Report No.:*
CN25T6WR 004

Produkt *Product:* PV Module

Modell *Type:*

Bezeichnung *Designation:*

Max. system voltage: up to 1500 VDC (Voc at STC):
With ½ cut of 182 mono c-Si cell:
GCL-M10/72GDFxxx (xxx=530-565, in steps of 5, 144 cells,Pmax@BNPI=580-615)
GCL-M10/60GDFxxx (xxx=445-470, in steps of 5, 120 cells,Pmax@BNPI=485-510)
GCL-M10/54GDFxxx (xxx=400-420, in steps of 5, 108 cells,Pmax@BNPI=435-455)
With ½ cut of N-type 210 mono c-Si cell:
GCL-NT12/66GDFxxx (xxx=660-740, in steps of 5, 132 cells,Pmax@BNPI=730-810)
GCL-NT12/60GDFxxx (xxx=600-670, in steps of 5, 120 cells,Pmax@BNPI=665-735)
With ½ cut of 210 mono c-Si cell:
GCL-M12/66GDFxxx (xxx=630-670, in steps of 5, 132 cells,Pmax@BNPI=695-735)
GCL-M12/60GDFxxx (xxx=575-605, in steps of 5, 120 cells,Pmax@BNPI=635-665)
With ½ cut of N-type 182 mono c-Si cell:
GCL-NT10/72GDFxxx (xxx=550-615, in steps of 5, 144 cells,Pmax@BNPI=605-670)
GCL-NT10/60GDFxxx (xxx=460-500, in steps of 5, 120 cells,Pmax@BNPI=505-545)
GCL-NT10/54GDFxxx (xxx=415-450, in steps of 5, 108 cells,Pmax@BNPI=455-490)
GCL-NT10/78GDFxxx (xxx=595-670, in steps of 5, 156 cells,Pmax@BNPI=655-730)
GCL-NT10/72GDF-Bxxx (xxx=550-615, in steps of 5, 144 cells,Pmax@BNPI=605-670)
GCL-NT10/54GDF-Bxxx (xxx=415-450, in steps of 5, 108 cells,Pmax@BNPI=455-490)
GCL-NT10/44GDF-Txxx (xxx=340-360, in steps of 5, 88 cells,Pmax@BNPI=370-390)
GCL-NT10/66GDFxxx (xxx=515-550, in steps of 5, 132 cells,Pmax@BNPI=570-610)
GCL-NT10/60GTxxx (xxx=460-500, in steps of 5, 120 cells,Pmax@BNPI=505-545)
GCL-NT10/72BGDFxxx (xxx=560-595, in steps of 5, 144 cells,Pmax@BNPI=620-655)
GCL-NT10/60BGDFxxx (xxx=470-495, in steps of 5, 120 cells,Pmax@BNPI=520-545)
GCL-NT10/54BGDFxxx (xxx=420-445, in steps of 5, 108 cells,Pmax@BNPI=465-490)
With ½ cut of N-type mono c-Si cell:
GCL-NT10R/72GDFxxx (xxx=570-625, in steps of 5, 144 cells,Pmax@BNPI=625-680)
GCL-NT10R/54GDFxxx (xxx=425-465, in steps of 5, 108 cells,Pmax@BNPI=470-510)
GCL-NT10R/54BGDFxxx (xxx=425-465, in steps of 5, 108 cells,Pmax@BNPI=470-510)
GCL-NT12R/66GDFxxx (xxx=580-650, in steps of 5, 132 cells,Pmax@BNPI=640-710)
GCL-NT12R/60GDFxxx (xxx=530-590, in steps of 5, 120 cells,Pmax@BNPI=585-645)

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Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
PV 50684924 0003

Berichtsnummer *Report No.:*
CN25T6WR 004

Produkt *Product:* PV Module

Modell *Type:*

Bezeichnung *Designation:*

GCL-NT12R/54GDFxxx (xxx=475-530, in steps of 5, 108 cells,Pmax@BNPI=525-580)
GCL-NT12R/48GDFxxx (xxx=425-475, in steps of 5, 96 cells,Pmax@BNPI=470-520)
GCL-NT12R/66BGDFxxx (xxx=585-635, in steps of 5, 132 cells,Pmax@BNPI=645-695)
GCL-NT12R/60BGDFxxx (xxx=530-575, in steps of 5, 120 cells,Pmax@BNPI=585-630)
GCL-NT12R/54BGDFxxx (xxx=480-515, in steps of 5, 108 cells,Pmax@BNPI=530-565)
GCL-NT12R/48BGDFxxx (xxx=425-460, in steps of 5, 96 cells,Pmax@BNPI=470-505)
GCL-NT12R/78GDFxxx (xxx=695-745, in steps of 5, 156 cells,Pmax@BNPI=770-820)
GCL-NT12R/72GDFxxx (xxx=640-690, in steps of 5, 144 cells,Pmax@BNPI=710-760)
GCL-NT12R/66BGFxxx (xxx=610-630, in steps of 5, 132 cells)
GCL-NT12R/60BGFxxx (xxx=555-570, in steps of 5, 120 cells)
GCL-NT12R/54BGFxxx (xxx=500-515, in steps of 5, 108 cells)
GCL-NT12R/48BGFxxx (xxx=445-455, in steps of 5, 96 cells)
With ½ cut of BC mono c-Si cell:
GCL-NR12R/66GDFxxx (xxx=585-665, in steps of 5, 132 cells,Pmax@BNPI=640-720)
GCL-NR12R/48GDFxxx (xxx=430-480, in steps of 5, 96 cells,Pmax@BNPI=475-525)
GCL-NR12R/66BGDFxxx (xxx=595-625, in steps of 5, 132 cells,Pmax@BNPI=650-680)
GCL-NR12R/48BGDFxxx (xxx=435-450, in steps of 5, 96 cells,Pmax@BNPI=475-490)
xxx represents output power in Wp

Remarks:
- Manufacturing site update: see page 4.

TÜV Rheinland LGA Products GmbH TÜVRheinland Zertifizierungsstelle

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Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
PV 50684924 0003

Berichtsnummer *Report No.:*
CN25T6WR 004

Produkt *Product:*
PV Module

Fertigungsstätten *Factories:*

1 Guangde GCL New Energy Technology Co., Ltd.
No. 12, Guangzao Road, Guangde Economic Development Zone,
Xuancheng,
242200 Anhui
P.R. China

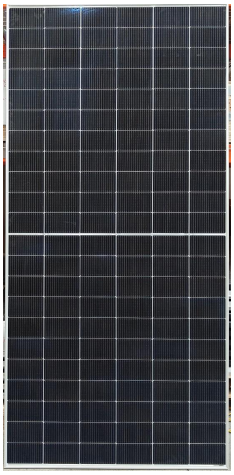
2 Hefei GCL System Integration New Energy Technology Co., Ltd.
Southeast Corner of Intersection of Sidingshan Road and Ruquan Road,Hefei Circular Economy Demonstration Park,
Feidong County, Hefei,
Anhui
P.R. China

3 Funing GCL System Integration Technology Co., Ltd.
No. 888(A) Hong Kong Road,
Funing Economic Development Zone,
Yancheng City
Jiangsu
P.R. China

TÜV Rheinland LGA Products GmbH
TÜVRheinland
Zertifizierungsstelle

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Prüfbericht-Nr.: *Test report no.*:	**CN25T6WR 004**	**Auftrags-Nr.:** *Order no.*:	326132521, 326136855	
Kunden-Referenz-Nr.: *Client reference no.*:	2071098	**Auftragsdatum:** *Order date:*	26/09/2025, 30/10/2025	
Auftraggeber: *Client*:	GCL System Integration Technology Co., Ltd. Jianghai Economic Zone, Nanqiao Town, Fengxian District, 201406 Shanghai, P. R. China			
Prüfgegenstand: *Test item*:	Photovoltaic (PV) module			
Bezeichnung / Typ-Nr.: *Identification / Type no.*:	See module type designation on page 3-4			
Auftrags-Inhalt: *Order content*:	Ammonia corrosion testing of photovoltaic (PV) modules			
Prüfgrundlage: *Test specification*:	IEC 62716:2013; EN 62716:2013 Photovoltaic (PV) modules – Ammonia corrosion testing			
Wareneingangsdatum: *Date of sample receipt*:	17/10/2025, 06/11/2025			
Prüfmuster-Nr.: *Test sample no:*	See clause 7.1			
Prüfzeitraum: *Testing period*:	02/11/2025 - 08/12/2025			
Ort der Prüfung: *Place of testing*:	Refer to page 5			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: *Test result**:	Pass			



geprüft von: *tested by:*	X Signed by: Ella Song	**genehmigt von:** *authorized by:*	X Signed by: Henry J. H. Zhu
Datum: *Date:* 12/03/2026		**Ausstellungsdatum:** *Issue date:* 12/03/2026	
Stellung / Position:	Project Engineer	**Stellung** / Position:	Authorizer

Sonstiges /
Other:

- Extension to alternative manufacturing plant: Guangde GCL New Energy Technology Co., Ltd.
- Extension to alternative materials and combinations.
- Valid in conjunction with TÜV Rheinland certificate PV 50603078.
- Valid only for the material combinations as listed in Constructional Data Form (CDF) No. CN25T6WR 004.

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery*:	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*P(ass) = passed a.m. test specification(s)*	*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.

Produktbeschreibung
Product description

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. *The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.*
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature *As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature*
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. *The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the “Zero Guard Band Rule” and “Simple Acceptance” in accordance with ILAC G8:2019 and IEC Guide 115:2023, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.*

Produktbeschreibung
Product description

1	**Produktdetails** *Product details*	**Model types:** Approved model types: Max. System Voltage: up to 1500 VDC (Voc at STC): With ½ cut of 182 mono c-Si cell: GCL-M10/72GDFxxx (xxx=530-565, in steps of 5, 144 cells, Pmax@BNPI=580-615) GCL-M10/60GDFxxx (xxx=445-470, in steps of 5, 120 cells, Pmax@BNPI=485-510) GCL-M10/54GDFxxx (xxx=400-420, in steps of 5, 108 cells, Pmax@BNPI=435-455) With ½ cut of N-type 210 mono c-Si cell: GCL-NT12/66GDFxxx (xxx=660-740, in steps of 5, 132 cells, Pmax@BNPI=730-810) GCL-NT12/60GDFxxx (xxx=600-670, in steps of 5, 120 cells, Pmax@BNPI=665-735) With ½ cut of 210 mono c-Si cell: GCL-M12/66GDFxxx (xxx=630-670, in steps of 5, 132 cells, Pmax@BNPI=695-735) GCL-M12/60GDFxxx (xxx=575-605, in steps of 5, 120 cells, Pmax@BNPI=635-665) With ½ cut of N-type 182 mono c-Si cell: GCL-NT10/72GDFxxx (xxx=550-615, in steps of 5, 144 cells, Pmax@BNPI=605-670) GCL-NT10/60GDFxxx (xxx=460-500, in steps of 5, 120 cells, Pmax@BNPI=505-545) GCL-NT10/54GDFxxx (xxx=415-450, in steps of 5, 108 cells, Pmax@BNPI=455-490) GCL-NT10/78GDFxxx (xxx=595-670, in steps of 5, 156 cells, Pmax@BNPI=655-730) GCL-NT10/72GDF-Bxxx (xxx=550-615, in steps of 5, 144 cells, Pmax@BNPI=605-670) GCL-NT10/54GDF-Bxxx (xxx=415-450, in steps of 5, 108 cells, Pmax@BNPI=455-490) GCL-NT10/44GDF-Txxx (xxx=340-360, in steps of 5, 88 cells, Pmax@BNPI=370-390) GCL-NT10/66GDFxxx (xxx=515-550, in steps of 5, 132 cells, Pmax@BNPI=570-610) GCL-NT10/60GTxxx (xxx=460-500, in steps of 5, 120 cells, Pmax@BNPI=505-545) GCL-NT10/72BGDFxxx (xxx=560-595, in steps of 5, 144 cells, Pmax@BNPI=620-655) GCL-NT10/60BGDFxxx (xxx=470-495, in steps of 5, 120 cells, Pmax@BNPI=520-545) GCL-NT10/54BGDFxxx (xxx=420-445, in steps of 5, 108 cells, Pmax@BNPI=465-490) With ½ cut of N-type mono c-Si cell: GCL-NT10R/72GDFxxx (xxx=570-625, in steps of 5, 144 cells, Pmax@BNPI=625-680) GCL-NT10R/54GDFxxx (xxx=425-465, in steps of 5, 108 cells, Pmax@BNPI=470-510) GCL-NT10R/54BGDFxxx (xxx=425-465, in steps of 5, 108 cells, Pmax@BNPI=470-510) GCL-NT12R/66GDFxxx (xxx=580-650, in steps of 5, 132 cells, Pmax@BNPI=640-710) GCL-NT12R/60GDFxxx (xxx=530-590, in steps of 5, 120 cells, Pmax@BNPI=585-645) GCL-NT12R/54GDFxxx (xxx=475-530, in steps of 5, 108 cells, Pmax@BNPI=525-580) GCL-NT12R/48GDFxxx (xxx=425-475, in steps of 5, 96 cells, Pmax@BNPI=470-520) GCL-NT12R/66BGDFxxx (xxx=585-635, in steps of 5, 132 cells, Pmax@BNPI=645-695) GCL-NT12R/60BGDFxxx (xxx=530-575, in steps of 5, 120 cells, Pmax@BNPI=585-630) GCL-NT12R/54BGDFxxx (xxx=480-515, in steps of 5, 108 cells, Pmax@BNPI=530-565) GCL-NT12R/48BGDFxxx (xxx=425-460, in steps of 5, 96 cells, Pmax@BNPI=470-505) GCL-NT12R/78GDFxxx (xxx=695-745, in steps of 5, 156 cells, Pmax@BNPI=770-820) GCL-NT12R/72GDFxxx (xxx=640-690, in steps of 5, 144 cells, Pmax@BNPI=710-760) GCL-NT12R/66BGFxxx (xxx=610-630, in steps of 5, 132 cells) GCL-NT12R/60BGFxxx (xxx=555-570, in steps of 5, 120 cells) GCL-NT12R/54BGFxxx (xxx=500-515, in steps of 5, 108 cells) GCL-NT12R/48BGFxxx (xxx=445-455, in steps of 5, 96 cells) With ½ cut of BC mono c-Si cell:

Produktbeschreibung
Product description

		GCL-NR12R/66GDFxxx (xxx=585-665, in steps of 5, 132 cells, Pmax@BNPI=640-720) GCL-NR12R/48GDFxxx (xxx=430-480, in steps of 5, 96 cells, Pmax@BNPI=475-525) GCL-NR12R/66BGDFxxx (xxx=595-625, in steps of 5, 132 cells, Pmax@BNPI= 650-680) GCL-NR12R/48BGDFxxx (xxx=435-450, in steps of 5, 96 cells, Pmax@BNPI=475-490) xxx represents output power in Wp
2	**Verwendete Materialien** *Used materials*	see Constructional Data Form (CDF) no. CN25T6WR 004
3	**Adresse(n) der Fertigungsstätte(n)** *Address(es) of the manufacturing site(s)*	

Name / Description:	Funing GCL System Integration Technology Co., Ltd.
Street:	No. 888(A) Hong Kong Road, Funing Ecnomic Development Zone, Yancheng City
Postcode / City, Country:	Jiangsu Province P.R. China
Type of production:	Crystalline PV-module
Inspection report No. and date	15104102.010 / 10/04/2025

Name / Description:	Hefei GCL System Integration New Energy Technology Co., Ltd.
Street:	Southeast Corner of Intersection of Sidingshan Road and Ruquan Road,Hefei Circular Economy Demonstration Park, Feidong County, Hefei
Postcode / City, Country:	Anhui, P.R. China
Type of production:	Crystalline PV-module
Inspection report No. and date	CN216HOS 005 / 09/04/2025

Name / Description:	**Guangde GCL New Energy Technology Co., Ltd.**
Street:	**No. 12, Guangzao Road, Guangde Economic Development Zone, Xuancheng**
Postcode / City, Country:	**242200 Anhui, P.R. China**
Type of production:	**Crystalline PV-module**
Inspection report No. and date	**CN25XXGD 001 / 16/09/2025**

Produktbeschreibung
Product description

4	**Sonstiges** *Other*	Test sample(s), as well sample information, description, product details and intended usage was provided by customer. Throughout this report a point is used as the decimal separator.
5	**Prüfmusterbereitstellung** *Test sample obtaining*	☒ Sending by customer ☐ Sampling by TÜV Rheinland Group ☐ others:
6	**Zusammenfassung der Prüfergebnisse** Summary of test results	According to the inquiry the resistance to ammonia corrosion of photovoltaic (PV) modules should be assessed in accordance with IEC 62716:2013 and EN 62716:2013. The required tests of IEC 62716:2013 and EN 62716:2013 were passed according to its regulations of the pass criteria. The above listed module types have passed all tests of the IEC 61215/EN 61215 and IEC 61730/EN IEC 61730 standards before ammonia corrosion resistance test was applied (see history of certification). - Extension to alternative manufacturing plant: Guangde GCL New Energy Technology Co., Ltd. as bold font shown in section 3. The factory inspection has been performed. - Extension to alternative materials and modifications in below table. The relevant tests were performed on representative models and test results are documented in this report.

Object	Manufacturer / trademark	Type / model	Technical data / ratings	Representative model for testing
Front cover	Hubei Hongnuo Glass Technology Co., Ltd.	AR Coating Semi-tempered Glass	Thickness=2.0mm	GCL-NT12R/66GDF635 (BOM1, Median power)
Rear cover		glazed semi-tempered glass (with white grid) (patterned)	Thickness=2.0mm	

- Extension to alternative materials and modifications in below table based on report No. CN23YV6C 022-024 for main license PV 50603078. Critical Components are listed as below and others materials refer to component list in Appendix D.

Object	Manufacturer / trademark	Type / model	Technical data / ratings
Front cover	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Hubei Hongnuo Glass Technology Co., Ltd.	AR Coating semi tempered Glass (patterned)	Thickness=2.0mm
Rear cover	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Hubei Hongnuo Glass Technology Co., Ltd.	glazed semi-tempered glass (with white grid) (patterned)	Thickness=2.0mm

This report have to be read in conjunction with test report No. CN23YV6C 001-024, CN25T6WR 001-003 and Constructional Data Form (CDF) No. CN25T6WR 004.

This test report includes a history of reporting and certification, measurement reports and photo documentation in the appendix.

Throughout this report a point is used as the decimal separator.

Summary of test location:
All the tests were tested at China Testing & Certification International Group Co., Ltd., China Photovoltaic Product Test Center, which is located at No.1, South side of Yanmi Road, economic development zone, Miyun District, Beijing, P.R. China.

Absatz *Clause*	Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse – Bemerkungen / *Measuring results - Remarks*	Ergebnis *Result*

7.1 List of test samples

Module type: GCL-NT12R/66GDF635(BOM1)

Sample no.	Sample SN	Remarks / constructional characteristics (e.g. cell, backsheet, frame type)
1-1	562507208220220	**Front cover: 2.0mm AR Coating Semi-tempered Glass (patterned) from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Hubei Hongnuo Glass Technology Co., Ltd.).** **Rear cover: 2.0mm glazed semi-tempered glass with white grid (patterned with white grid) from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Hubei Hongnuo Glass Technology Co., Ltd.).** Encapsulation material: B602M (near glass) / B601HP (near backsheet) from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Changzhou Betterial Film Technology Co., Ltd.) thickness=0.55mm. Solar cell: GCL-N-M210RBi(16BB) from GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: WuHu GCL System Integration Technology Co., Ltd.) 182.3mmx105mm±0.5mm,130± 13μm Frame: 30mm,6005-T6 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Anhui Xinbo Technology Co., Ltd.) Adhesive (frame): SMG533 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Guangzhou Baiyun Technology Co., Ltd.) Cell connector: 0.24mm,0.26mm Sn60Pb40 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Xi'an Telison New Materials Co., Ltd) String connector: 0.3mm×4.0mm, 0.4mmx4.0mm Sn60Pb40 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Xi'an Telison New Materials Co., Ltd) Fluxing agent: WTO-PV105A from Shenzhen Vital New Material Company Limited Fixing tape: D60F6-4 from Suzhou Rongzhi Electronic Technology Co., Ltd. Junction box: GCL-N1xyz from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Suzhou Xtong Photovoltaic Technologies Co., Ltd.). Cable: 62930 IEC 131 1X4.0 mm2 from Hefei GCL System Integration New Energy Technology Co., Ltd. Connectors: GCL-01 from Hefei GCL System Integration New Energy Technology Co., Ltd. Bypass diode: GCL4045-B from Hefei GCL System Integration New Energy Technology Co., Ltd. Adhesive (junction box): SMG533 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Guangzhou Baiyun Technology Co., Ltd.) Potting material: SKF323 from Guangzhou Baiyun Chemical Industry Co., Ltd.
1-2	562507208220223	
1-3	562507208220229	

—

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

Module type: GCL-NT12R/66GDF635(BOM2)

Sample no.	Sample SN	Remarks / constructional characteristics (e.g. cell, backsheet, frame type)
2-1	56251023O280575	Front cover: 2.0mm AR Coating Semi-tempered Glass (patterned) from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: IRICO Group New Energy Co., Ltd.) Rear cover: 2.0mm semi-tempered glass (patterned) from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: IRICO Group New Energy Co., Ltd.) Encapsulation material: B602M (near glass) / B601HP (near backsheet) from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Cybrid Technology Inc.) thickness=0.50mm. Solar cell: GCL-N-M210RBi(16BB) from GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: WuHu GCL System Integration Technology Co., Ltd.) 182.2mmx105mm ±0.5mm, 130±15μm Frame: 6005-T6 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: J Anhui Xinbo Technology Co., Ltd.). Adhesive (frame): SMG533 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Guangzhou Baiyun Technology Co., Ltd.). Cell connector: 0.24mm,0.26mm Sn60Pb40 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Xi'an Telison New Materials Co., Ltd) String connector: 0.4mm×6.0mm, 0.35mmx4.0mm Sn60Pb40 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Xi'an Telison New Materials Co., Ltd) Fluxing agent: WTO-PV105A from Shenzhen Vital New Material Company Limited Fixing tape: D60F6-4 from Suzhou Rongzhi Electronic Technology Co., Ltd. Light Redirection Film: BC81, WM800 from Heyu Technology Co., Ltd. Junction box: GCL-N1xyz from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Suzhou Xtong Photovoltaic Technologies Co., Ltd.). Cable: 62930 IEC 131 1X6.0 mm2 from Hefei GCL System Integration New Energy Technology Co., Ltd. Connectors: GCL-01 from Hefei GCL System Integration New Energy Technology Co., Ltd. Bypass diode: GCL4045-B from Hefei GCL System Integration New Energy Technology Co., Ltd. Adhesive (junction box): SMG533 from Hefei GCL System Integration New Energy Technology Co., Ltd. (OEM manufacturer: Guangzhou Baiyun Technology Co., Ltd.) Potting material: SKF323 from Guangzhou Baiyun Chemical Industry Co., Ltd.
2-2	56251023O280580	
2-3	56251023O280605	

—

Remark: N/A

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

7.2	**Visual inspection (initial)**		
Test date (dd/mm/yyyy)	02/11/2025 for Sample #1-1~#1-3; 14/11/2025 for Sample #2-1~#2-3		
Sample no.	Requirement	Nature and position of initial findings	—
1-1	No major visual defects	No major visual defects	P
1-2		No major visual defects	P
1-3		No major visual defects	P
2-1		No major visual defects	P
2-2		No major visual defects	P
2-3		No major visual defects	P
Supplementary information: N/A			

7.3	**Maximum power determination at STC (initial)**						
Test date (dd/mm/yyyy)			02/11/2025 for Sample #1-1~#1-3; 14/11/2025 for Sample #2-1~#2-3				—
Test method			☒ Simulator ☐ Natural sunlight				
Ambient temperature [°C]			25 ± 2				
Irradiance [W/m²]			1000 ± 10				
Module temperature [°C]			25 ± 2				
Sample no.	I_{sc} [A]	V_{oc} [V]	P_{max} [W]	I_{mpp} [A]	V_{mpp} [V]	FF [%]	
1-1	629.8	41.39	15.217	49.06	16.062	79.9	N/A
1-2	629.5	41.13	15.305	48.98	16.087	79.9	N/A
1-3	628.7	41.34	15.209	49.09	16.017	80.0	N/A
2-1	645.5	42.53	15.178	49.15	15.695	83.7	N/A
2-2	645.5	42.62	15.144	49.19	15.677	83.7	N/A
2-3	646.3	42.48	15.214	49.15	15.723	83.6	N/A
Supplementary information: N/A							

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

7.4 Insulation test (initial)

Test date (dd/mm/yyyy)				02/11/2025 for Sample #1-1~#1-3; 14/11/2025 for Sample #2-1~#2-3		—
Maximum system voltage [V_{DC}]				1500		
High voltage applied [V_{DC}]				8000		
Insulation resistance measured at [V_{DC}]				1500		
Sample no.	R_{iso} [GΩ]	A [m²]	R_{iso}·A [GΩ·m²]	Dielectric breakdown		
				Yes (description)	No	
1-1	>15.00	2.70	>40.52	-	No	P
1-2	>15.00	2.70	>40.52	-	No	P
1-3	>15.00	2.70	>40.52	-	No	P
2-1	>15.00	2.70	>40.52	-	No	P
2-2	>15.00	2.70	>40.52	-	No	P
2-3	>15.00	2.70	>40.52	-	No	P

Supplementary information:
Minimum requirement is 0.04 GΩ·m² for A > 0.1 m² and 0.4 GΩ for A ≤ 0.1 m².
Insulation tester can measure up to 15.00 GΩ.

7.5 Wet leakage current test (initial)

Test date (dd/mm/yyyy)		02/11/2025 for Sample #1-1~#1-3; 14/11/2025 for Sample #2-1~#2-3		—
Insulation resistance measured at [V_{DC}]		1500		
Solution resistivity [Ω·cm]		≤ 3500		
Solution temperature [°C]		22 ± 2		
Sample no.	R_{iso} [MΩ]	A [m²]	R_{iso}·A [MΩ·m²]	
1-1	>15000.0	2.70	>40515.0	P
1-2	>15000.0	2.70	>40515.0	P
1-3	>15000.0	2.70	>40515.0	P
2-1	>15000.0	2.70	>40515.0	P
2-2	>15000.0	2.70	>40515.0	P
2-3	>15000.0	2.70	>40515.0	P

Supplementary information:
Minimum requirement is 40 MΩ·m².
Insulation tester can measure up to 15000.0 MΩ.

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

7.6	**Continuity test of equipotential bonding (initial)**		
Test date (dd/mm/yyyy)		02/11/2025	—
Maximum overcurrent protection rating [A]		35.0	
Current applied [A]		87.5	
Duration of applied current [min]		2	
Location of designated point for equipotential bonding		Long side of the frame	
No. of other conductive parts tested		3	
Sample no.	Max. measured voltage [mV]	Max. calculated resistance [mΩ]	
1-1	—	1.0	P
1-2	—	1.0	P
1-3	—	1.0	P
Supplementary information: N/A			

7.6	**Continuity test of equipotential bonding (initial)**		
Test date (dd/mm/yyyy)		14/11/2025	—
Maximum overcurrent protection rating [A]		35.0	
Current applied [A]		87.5	
Duration of applied current [min]		2	
Location of designated point for equipotential bonding		Long side of the frame	
No. of other conductive parts tested		3	
Sample no.	Max. measured voltage [mV]	Max. calculated resistance [mΩ]	
2-1	—	1.0	P
2-2	—	1.0	P
2-3	—	1.0	P
Supplementary information: N/A			

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*
8	**Ammonia corrosion test**		
Test date (dd/mm/yyyy)		02/11/2025 - 22/11/2025	—
Sample no. 1-2		562507208220223	—
Sample no. 1-3		562507208220229	
NH_3 concentration [ppm]		6664~6669	—
Temperature [°C]		59.2~61.5	
Relative humidity [%]		97.2~100.0	
Course of cycle (1 day)		- exposure of NH_3 for 8 hours and 60°C with nearly 100% condensation on the samples - drying for 16 hours at 18°C~28°C and max. 75%RH	
Duration		20 cycles = 480 hours (20 days)	
Comment		According to DIN EN ISO 3231/DIN EN ISO 6988 DIN 50018	
Supplementary information: N/A			

8	**Ammonia corrosion test**		
Test date (dd/mm/yyyy)		18/11/2025 - 08/12/2025	—
Sample no. 2-2		56251023O280580	—
Sample no. 2-3		56251023O280605	
NH_3 concentration [ppm]		6665~6667	—
Temperature [°C]		58.8~59.6	
Relative humidity [%]		97.5~100.0	
Course of cycle (1 day)		- exposure of NH_3 for 8 hours and 60°C with nearly 100% condensation on the samples - drying for 16 hours at 18°C~28°C and max. 75%RH	
Duration		20 cycles = 480 hours (20 days)	
Comment		According to DIN EN ISO 3231/DIN EN ISO 6988 DIN 50018	
Supplementary information: N/A			

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

8.1	**Visual inspection after Ammonia corrosion test (control)**		
Test date (dd/mm/yyyy)	22/11/2025 for Sample #1-2~#1-3; 08/12/2025 for Sample #2-2~#2-3		
Sample no.	Requirement	Nature and position of initial findings	—
1-2	No major visual defects	No major visual defects	P
1-3		No major visual defects	P
2-2		No major visual defects	P
2-3		No major visual defects	P
Supplementary information: N/A			

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

8.2 Maximum power determination at STC after Ammonia corrosion test (control)

Test date (dd/mm/yyyy)				22/11/2025 for Sample #1-2~#1-3; 08/12/2025 for Sample #2-2~#2-3				—
Test method				☒ Simulator ☐ Natural sunlight				
Ambient temperature [°C]				25 ± 2				
Irradiance [W/m²]				1000 ± 10				
Module temperature [°C]				25 ± 2				
Measurement uncertainities [%] (k =2)				$P_{max,m1}$	≤ 2.28	$V_{oc,m2}$ ≤ 0.74	$I_{sc,m3}$	≤ 2.16
Sample no.	I_{sc} [A]	V_{oc} [V]	P_{max} [W]	I_{mpp} [A]	V_{mpp} [V]	FF [%]	Degra-dation [%]	
1-2	625.8	41.44	15.101	48.55	15.759	81.8	-0.60	P
1-3	623.7	41.24	15.123	48.40	15.769	81.7	-0.80	P
2-2	642.6	42.54	15.108	48.94	15.639	84.0	-0.44	P
2-3	642.6	42.42	15.147	48.93	15.685	83.7	-0.57	P

Supplementary information: Negative means power loss.

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

8.3 Insulation test after Ammonia corrosion test (control)

Test date (dd/mm/yyyy)				23/11/2025 for Sample #1-2~#1-3; 08/12/2025 for Sample #2-2~#2-3		—
Maximum system voltage [V_{DC}]				1500		
High voltage applied [V_{DC}]				8000		
Insulation resistance measured at [V_{DC}]				1500		
Sample no.	R_{iso} [GΩ]	A [m²]	R_{iso}·A [GΩ·m²]	Dielectric breakdown		
				Yes (description)	No	
1-2	>15.00	2.70	>40.52	-	No	P
1-3	>15.00	2.70	>40.52	-	No	P
2-2	>15.00	2.70	>40.52	-	No	P
2-3	>15.00	2.70	>40.52	-	No	P

Supplementary information:
Minimum requirement is 0.04 GΩ·m² for A > 0.1 m² and 0.4 GΩ for A ≤ 0.1 m².
Insulation tester can measure up to 15.00 GΩ.

8.4 Wet leakage current test after Ammonia corrosion test (control)

Test date (dd/mm/yyyy)		23/11/2025 for Sample #1-2~#1-3; 08/12/2025 for Sample #2-2~#2-3		—
Insulation resistance measured at [V_{DC}]		1500		
Solution resistivity [Ω·cm]		≤ 3500		
Solution temperature [°C]		22 ± 2		
Sample no.	R_{iso} [MΩ]	A [m²]	R_{iso}·A [MΩ·m²]	
1-2	>15000.0	2.70	>40515.0	P
1-3	>15000.0	2.70	>40515.0	P
2-2	>15000.0	2.70	>40515.0	P
2-3	>15000.0	2.70	>40515.0	P

Supplementary information: Minimum requirement is 40 MΩ·m².
Insulation tester can measure up to 15000.0 MΩ.

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

8.5	**Continuity test of equipotential bonding after Ammonia corrosion test (control)**		
Test date (dd/mm/yyyy)		23/11/2025	—
Maximum overcurrent protection rating [A]		35.0	
Current applied [A]		87.5	
Duration of applied current [min]		2	
Location of designated point for equipotential bonding		Long side of the frame	
No. of other conductive parts tested		3	
Sample no.	Max. measured voltage [mV]	Max. calculated resistance [mΩ]	
1-2	—	1.0	P
1-3	—	1.0	P
Supplementary information: N/A			

8.5	**Continuity test of equipotential bonding after Ammonia corrosion test (control)**		
Test date (dd/mm/yyyy)		08/12/2025	—
Maximum overcurrent protection rating [A]		35.0	
Current applied [A]		87.5	
Duration of applied current [min]		2	
Location of designated point for equipotential bonding		Long side of the frame	
No. of other conductive parts tested		3	
Sample no.	Max. measured voltage [mV]	Max. calculated resistance [mΩ]	
2-2	—	1.0	P
2-3	—	1.0	P
Supplementary information: N/A			

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen /** *Measuring results - Remarks*	**Ergebnis** *Result*

8.6	**Bypass diode functionality test after Ammonia corrosion test (control)**				
Test date (dd/mm/yyyy)		23/11/2025 for Sample #1-2~#1-3; 08/12/2025 for Sample #2-2~#2-3			—
Number of diodes in junction box		3			
Sample no.	Diode 1	Diode 2		Diode 3	
1-2	working properly	working properly		working properly	P
1-3	working properly	working properly		working properly	P
2-2	working properly	working properly		working properly	P
2-3	working properly	working properly		working properly	P
Supplementary information: N/A					

--- Ende des Prüfberichts / *End of Test Report* ---

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Appendix A: Abbreviations used in the report

NMOT	Nominal Module Operating Temperature
STC	Standard Test Conditions
P_{max}	Maximum power
I_{mpp}	Maximum power point current
V_{mpp}	Maximum power point voltage
I_{sc}	Short circuit current
V_{oc}	Open circuit voltage
FF	Fill factor
A	Module area

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Appendix B: History of reporting and certification

Subject	Module type	Report no.	Certificate no.	Date of issue
Basic qualification IEC 62716:2013 EN 62716:2013	Max. system voltage: up to 1500 VDC (Voc at STC): With ½ cut of BC mono c-Si cell: GCL-NR12R/66GDFxxx (xxx=585-635, in steps of 5, 132 cells, Pmax@BNPI= 640.2, 645.6, 651.1, 656.8, 662.4, 667.7, 673.1, 678.6, 684.0, 689.3, 695.2) GCL-NR12R/48GDFxxx (xxx=430-460, in steps of 5, 96 cells, Pmax@BNPI=475-505) GCL-NR12R/66BGDFxxx (xxx=595-625, in steps of 5, 132 cells, Pmax@BNPI= 650-680) GCL-NR12R/48BGDFxxx (xxx=435-450, in steps of 5, 96 cells, Pmax@BNPI=475-490) With ½ cut of N-type 210 mono c-Si cell: GCL-NT12/66GDFxxx (xxx=660-735, in steps of 5, 132 cells, Pmax@BNPI=730-805) GCL-NT12/60GDFxxx (xxx=600-665, in steps of 5, 120 cells, Pmax@BNPI=665-730) With ½ cut of N-type 182 mono c-Si cell: GCL-NT10/78GDFxxx (xxx=595-670, in steps of 5, 156 cells, Pmax@BNPI=655-730) GCL-NT10/72GDFxxx (xxx=550-615, in steps of 5, 144 cells, Pmax@BNPI=605-670) GCL-NT10/60GDFxxx (xxx=460-500, in steps of 5, 120 cells, Pmax@BNPI=505-545) GCL-NT10/54GDFxxx (xxx=415-450, in steps of 5, 108 cells, Pmax@BNPI=455-490) GCL-NT10/72GDF-Bxxx (xxx=550-615, in steps of 5, 144 cells, Pmax@BNPI=605-655) GCL-NT10/54GDF-Bxxx (xxx=415-450, in steps of 5, 108 cells, Pmax@BNPI=455-490) GCL-NT10/44GDF-Txxx (xxx=340-360, in steps of 5, 88 cells, Pmax@BNPI=370-390) GCL-NT10/60GTxxx (xxx=460-500, in steps of 5, 120 cells, Pmax@BNPI=505-545) GCL-NT10/66GDFxxx (xxx=515-550, in steps of 5, 132 cells, Pmax@BNPI=570-610) With ½ cut of N-type mono c-Si cell: GCL-NT10R/72GDFxxx (xxx=570-625, in steps of 5, 144 cells, Pmax@BNPI=625-680) GCL-NT10R/54GDFxxx (xxx=425-465, in steps of 5, 108 cells, Pmax@BNPI=470-510) GCL-NT10R/54BGDFxxx (xxx=425-465, in steps of 5, 108 cells, Pmax@BNPI=470-510) GCL-NT12R/66GDFxxx (xxx=580-635, in steps of 5, 132 cells, Pmax@BNPI=640-695) GCL-NT12R/60GDFxxx (xxx=530-575, in steps of 5, 120 cells, Pmax@BNPI=585-630) GCL-NT12R/54GDFxxx (xxx=475-515, in steps of 5, 108 cells, Pmax@BNPI=525-565) GCL-NT12R/48GDFxxx (xxx=425-460, in steps of 5, 96 cells, Pmax@BNPI=470-505) GCL-NT12R/66BGDFxxx (xxx=585-620, in steps of 5, 132 cells, Pmax@BNPI=645-680) GCL-NT12R/60BGDFxxx (xxx=530-560, in steps of 5, 120 cells, Pmax@BNPI=585-615) GCL-NT12R/54BGDFxxx (xxx=480-505, in steps of 5, 108 cells, Pmax@BNPI=530-555) GCL-NT12R/48BGDFxxx (xxx=425-450, in steps of 5, 96 cells, Pmax@BNPI=470-495) GCL-NT12R/66BGFxxx (xxx=610-630, in steps of 5, 132 cells) GCL-NT12R/60BGFxxx (xxx=555-570, in steps of 5, 120 cells) GCL-NT12R/54BGFxxx (xxx=500-515, in steps of 5, 108 cells) GCL-NT12R/48BGFxxx (xxx=445-455, in steps of 5, 96 cells) GCL-NT12R/78GDFxxx (xxx=695-745, in steps of 5, 156 cells, Pmax@BNPI=770-820) GCL-NT12R/72GDFxxx (xxx=640-690, in steps of 5, 144 cells, Pmax@BNPI=710-760)	CN25T6WR 001	PV 50684924 0001	03/07/2025

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Extension to alternative materials	Same as above	CN25T6WR 002	/	03/09/2025
Extension to alternative materials	Same as above	CN25T6WR 003	/	19/11/2025

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Appendix C: Measurement reports
Module type: GCL-NT12R/66GDF635(BOM1)

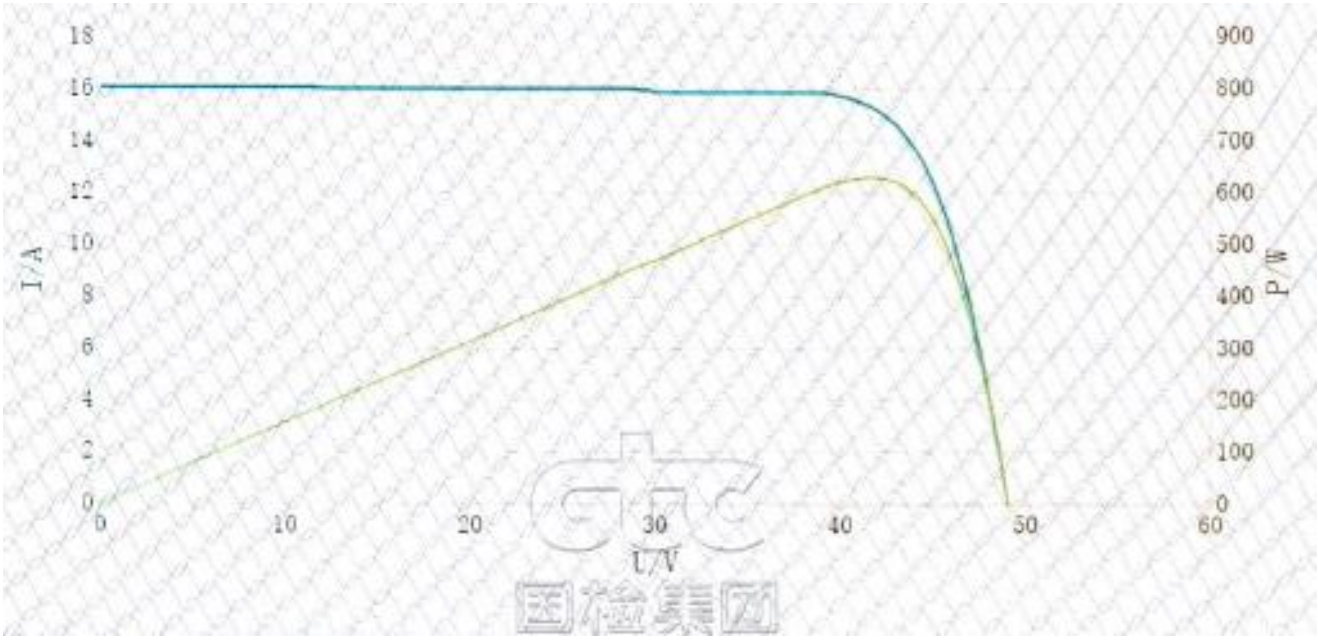


Fig. 1: IV-curves of serial no. 562507208220220 (initial)

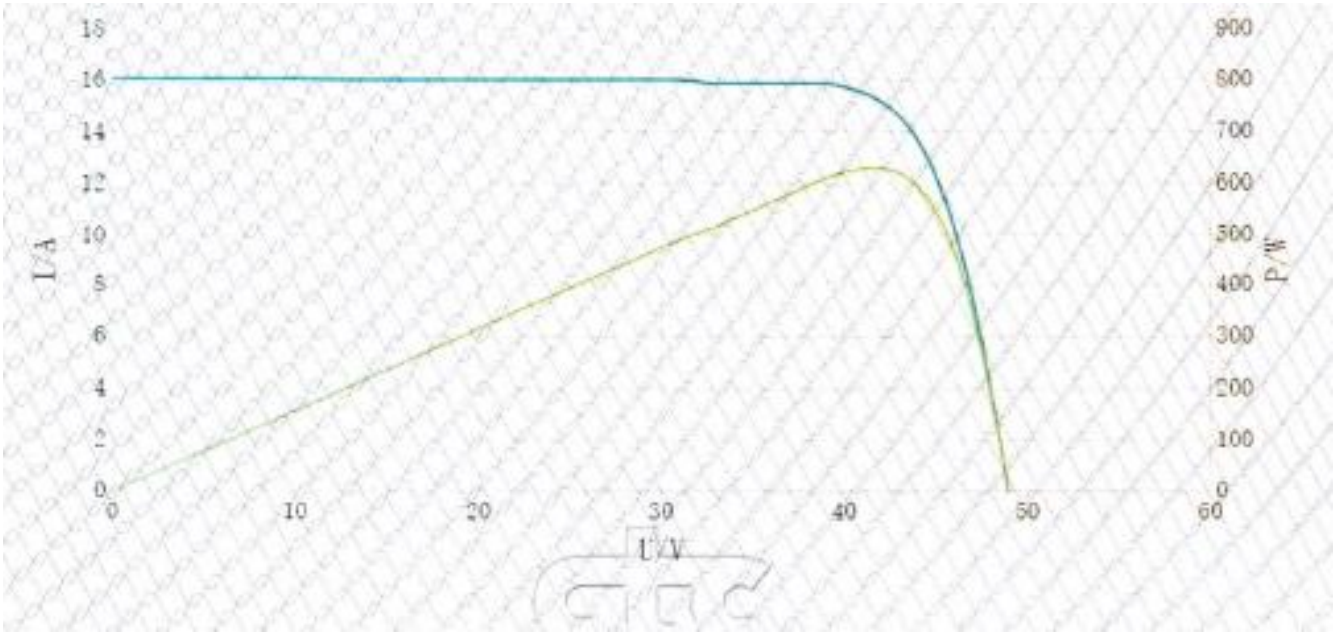


Fig. 2: IV-curves of serial no. 562507208220223 (initial)

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

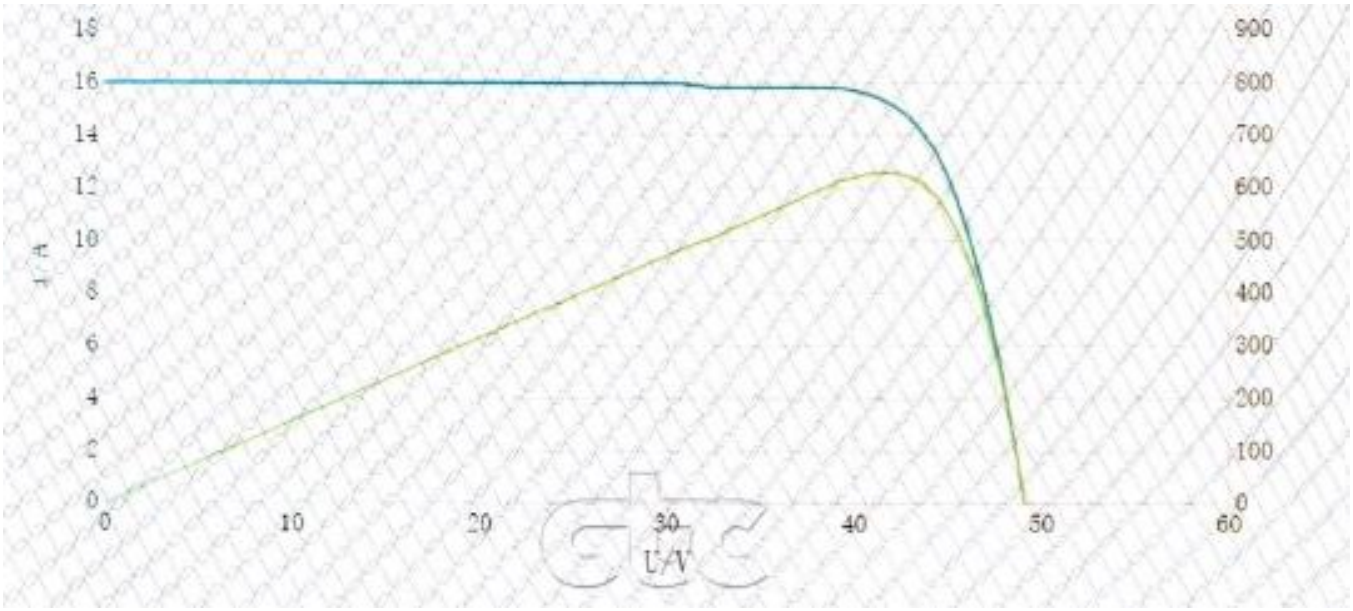


Fig. 3: IV-curves of serial no. 562507208220229 (initial)

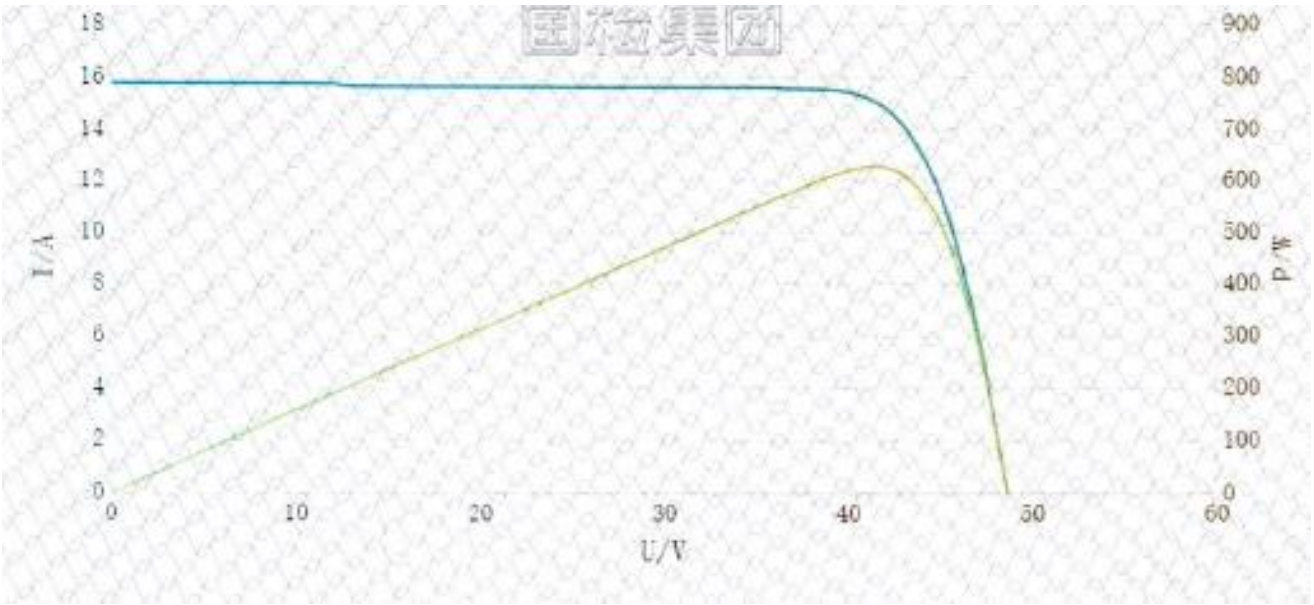


Fig. 4: IV-curves of serial no. 562507208220223 (final)

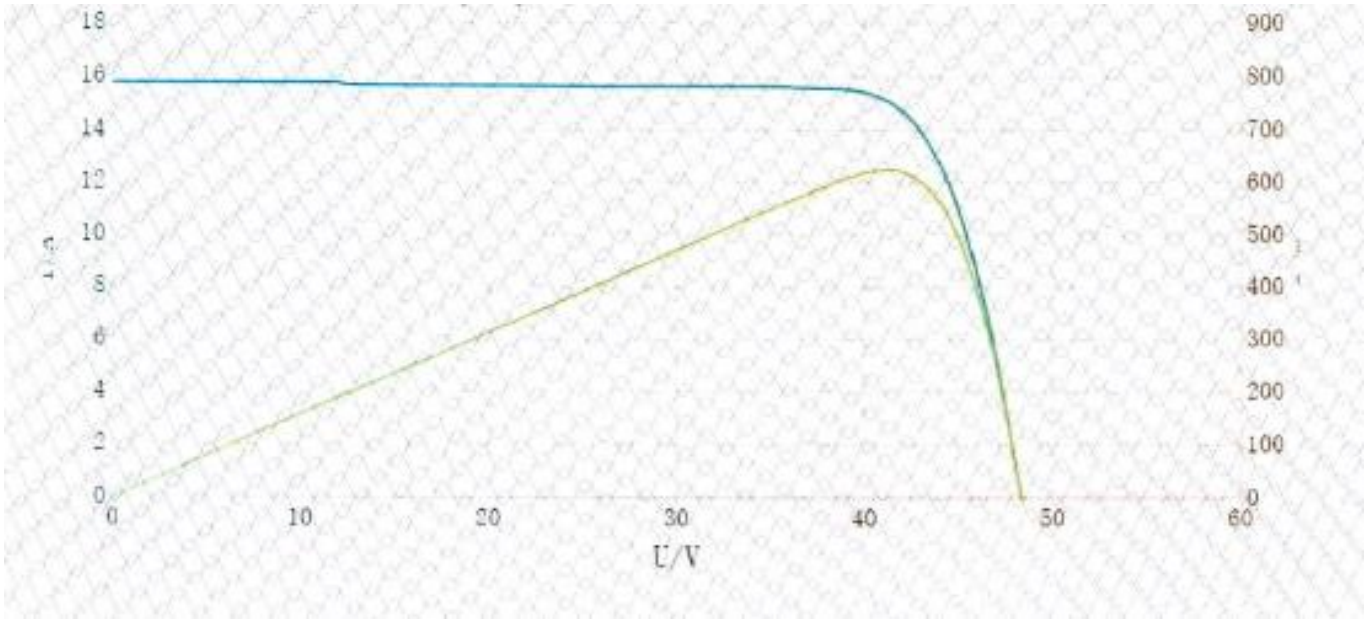


Fig. 5: IV-curves of serial no. 562507208220229 (final)

Module type: GCL-NT12R/66GDF635(BOM2)

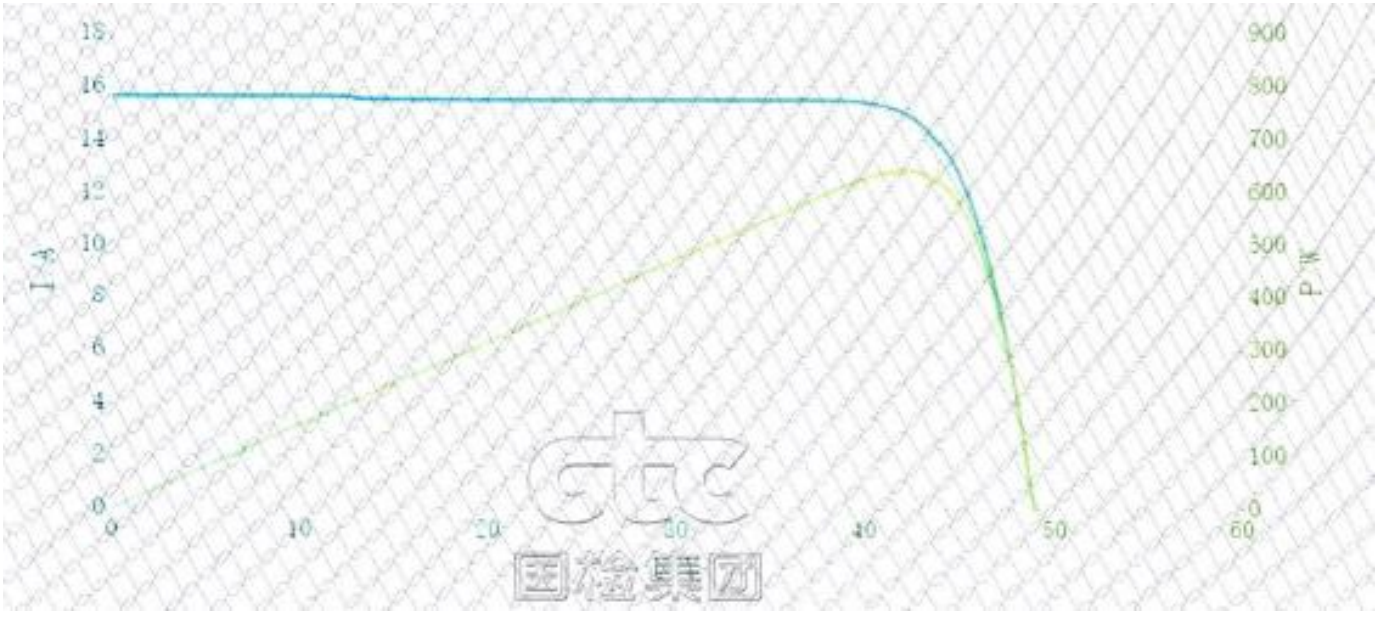


Fig. 6: IV-curves of serial no. 56251023O280575 (initial)

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

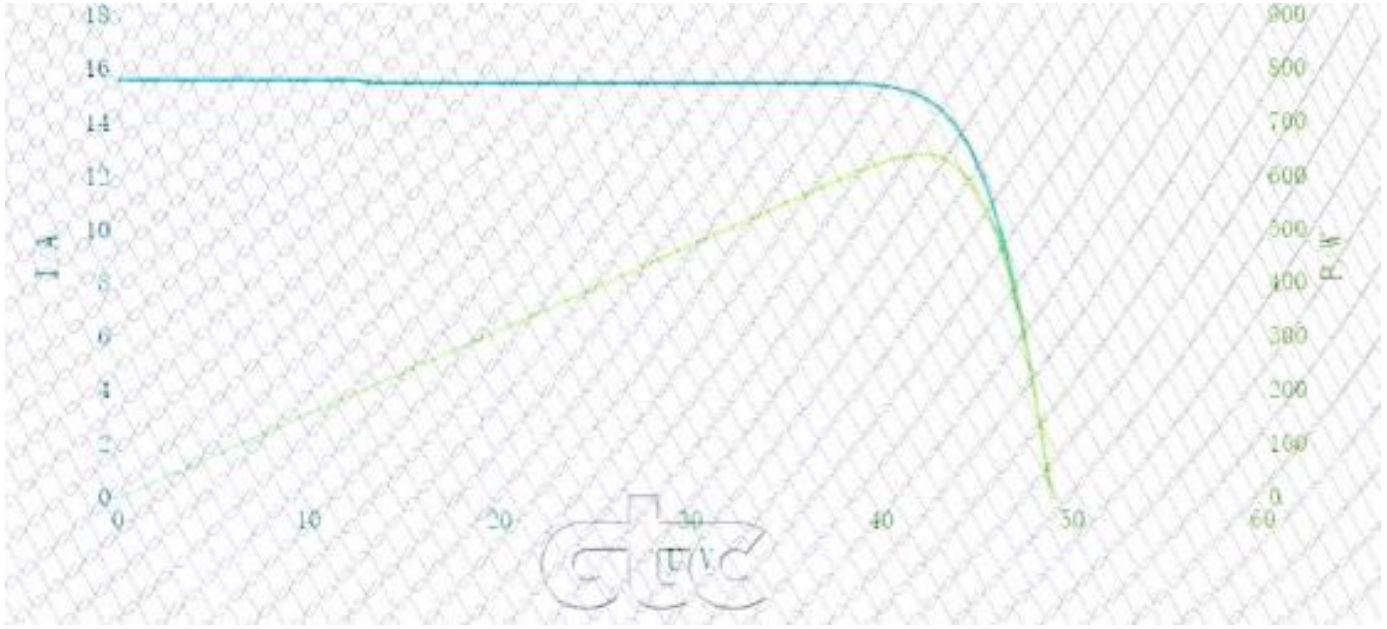


Fig. 7: IV-curves of serial no. 56251023O280580 (initial)

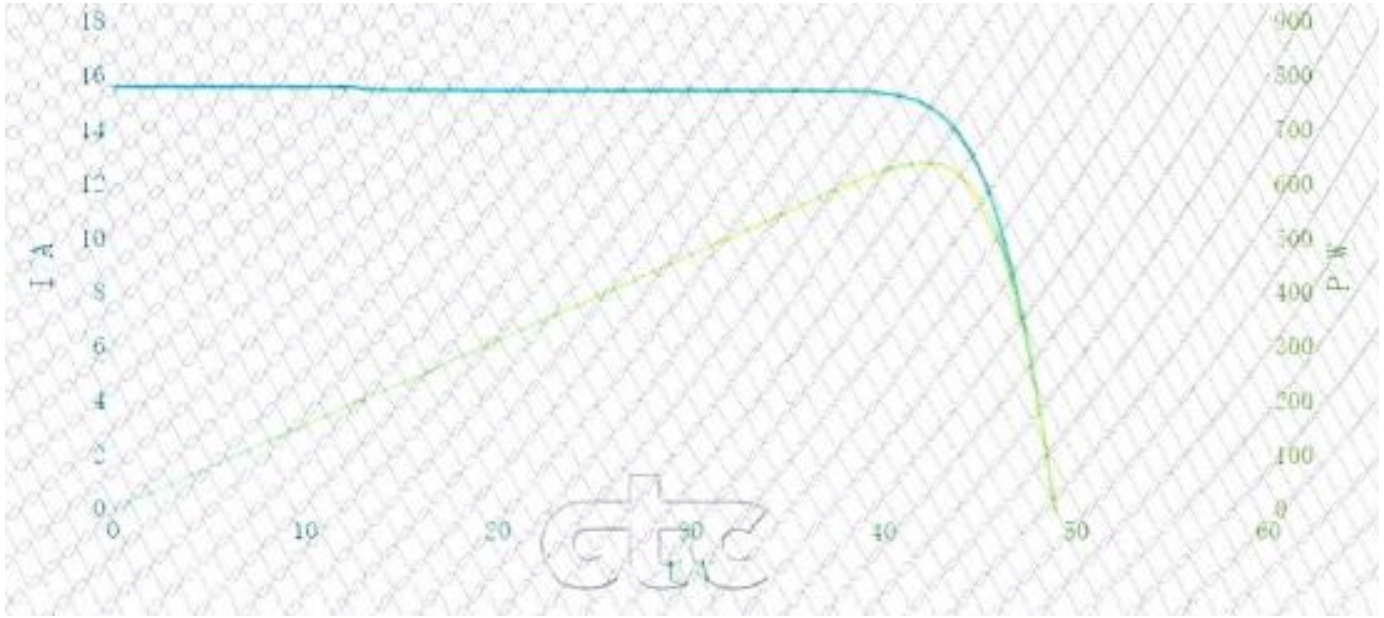


Fig. 8: IV-curves of serial no. 56251023O280605 (initial)

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

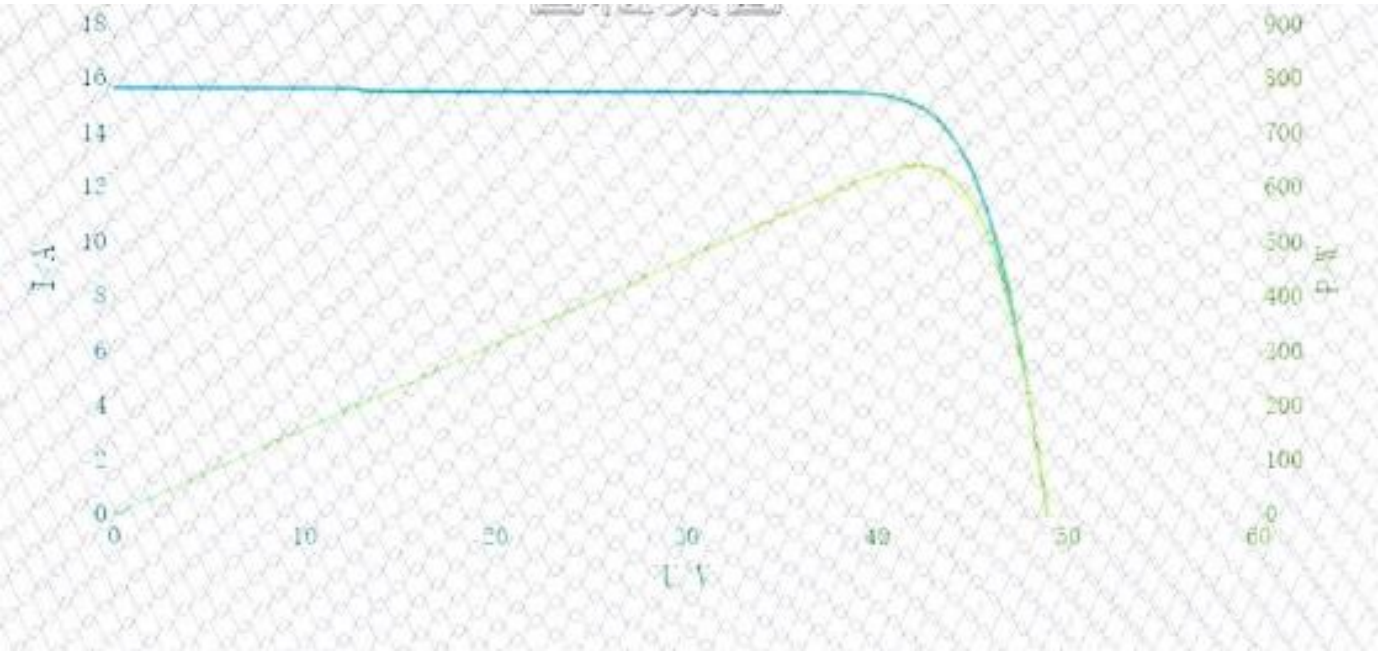


Fig. 9: IV-curves of serial no. 56251023O280580 (final)

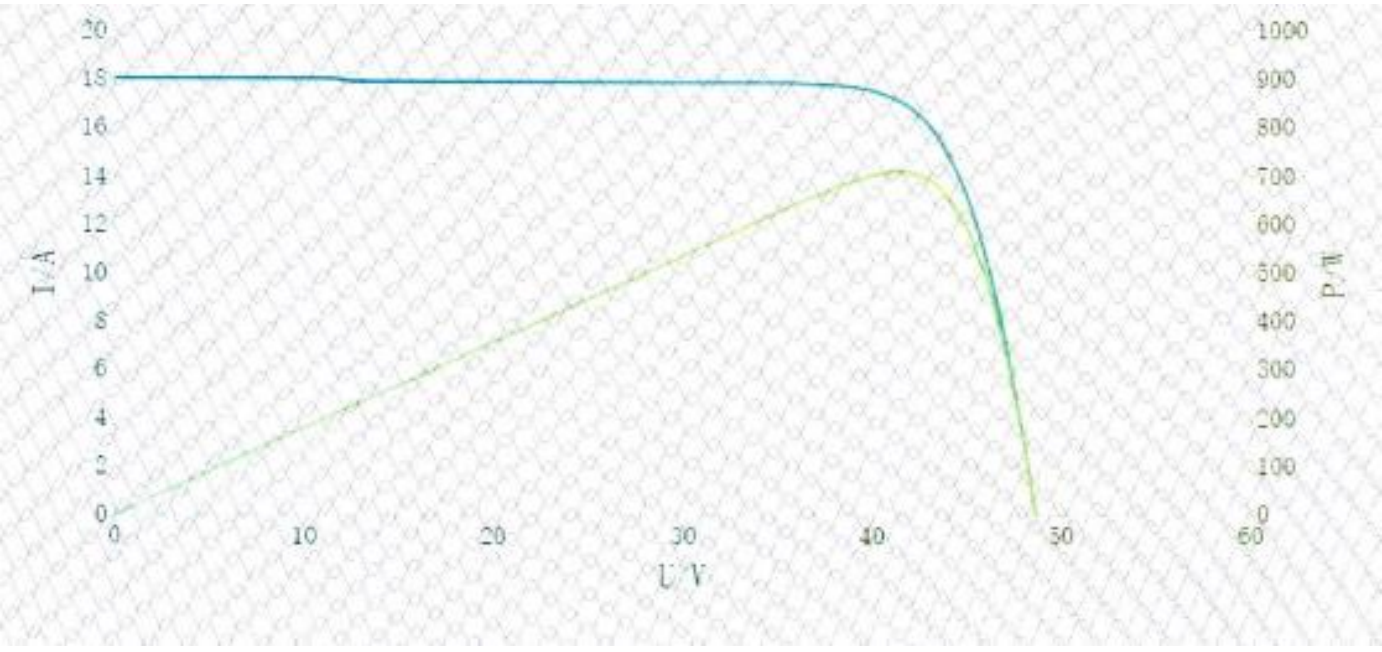


Fig. 10: IV-curves of serial no. 56251023O280605 (final)

FOTO-DOKUMENTATION
PHOTO DOCUMENTATION

Appendix D: Photos
Module type: GCL-NT12R/66GDF635 (STC) (BOM1, BOM2)

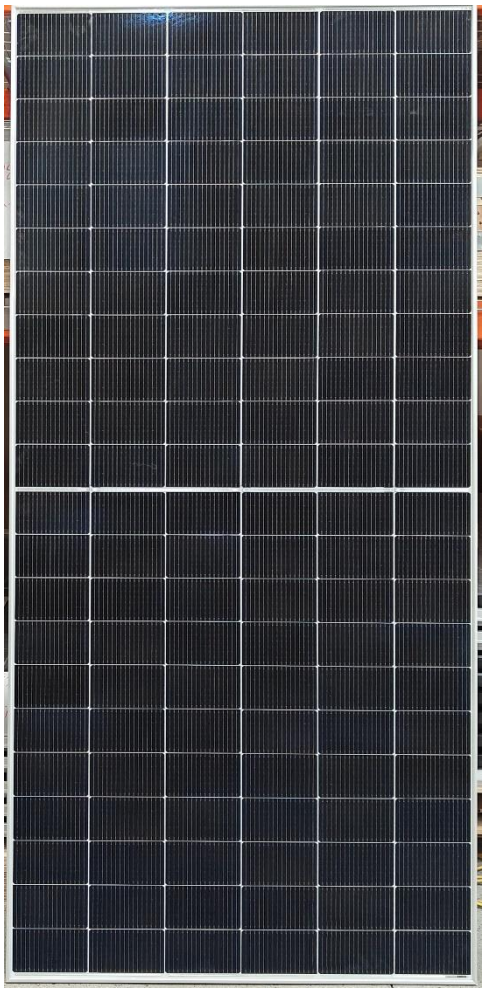


Fig. 11: front view of test sample

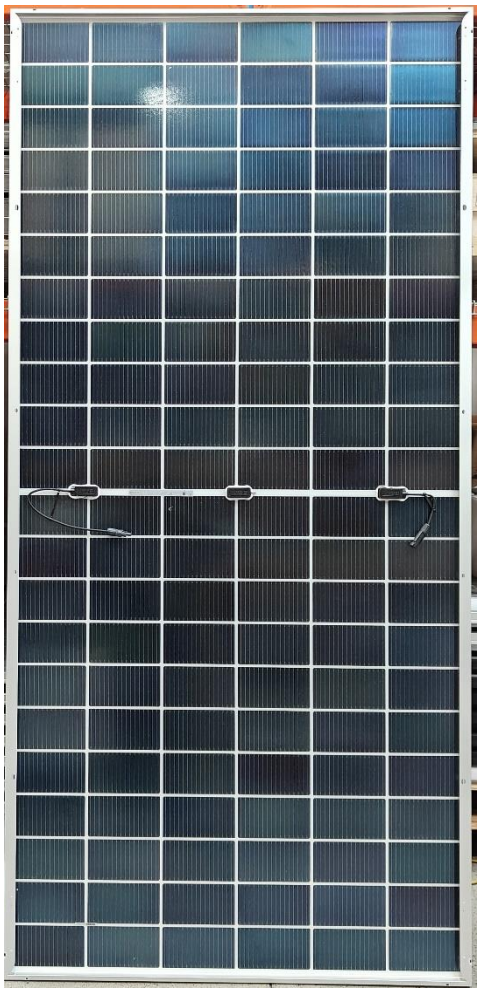


Fig. 12: rear view of test sample

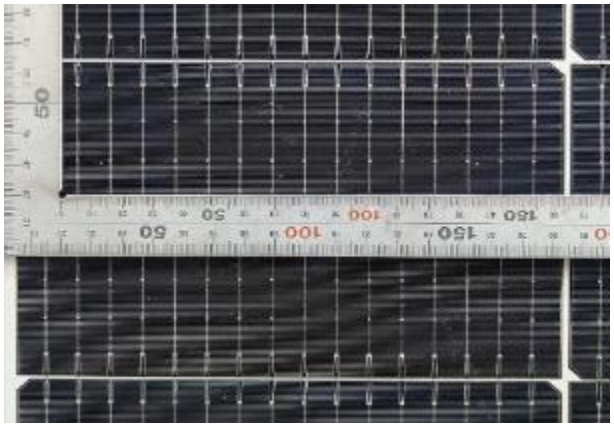


Fig. 13: detail view of solar cell

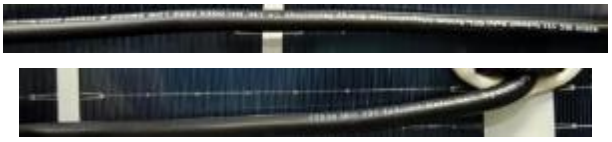


Fig. 14: detail view of cable

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Fig. 15: detail view of closed junction box



Fig. 16: detail view of connector



Fig. 17: detail view of frame corner

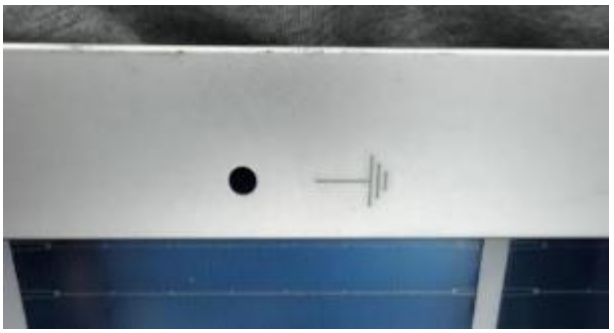


Fig. 18: detail view of grounding hole and symbol

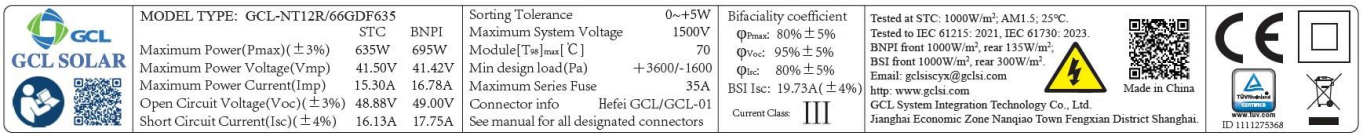


Fig. 19: detail view of type label

Appendix E: Component list

TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 1 of 71

Constructional Data Form for Photovoltaic Modules

License Holder : (full address)	GCL System Integration Technology Co., Ltd. Jianghai Economic Zone, Nanqiao Town, Fengxian District, 201406 Shanghai, P. R. China
Production Factory 1 .....: (full address)	Funing GCL System Integration Technology Co., Ltd. No. 888(A) Hong Kong Road, Funing Economic Development Zone, Yancheng City, Jiangsu Province P.R. China
Production Factory 2: (full address)	Hefei GCL System Integration New Energy Technology Co., Ltd. Southeast Corner of Intersection of Sidingshan Road and Ruquan Road, Hefei Circular Economy Demonstration Park, Feidong County, Hefei, Anhui, P.R. China
Production Factory 3: (full address)	Guangde GCL New Energy Technology Co., Ltd. No. 12, Guangzao Road, Guangde Economic Development Zone, Xuancheng, 242200 Anhui, P.R. China.
Type of Product.....:	Photovoltaic (PV) Modules
Trademark .....:	GCL

Module family A: PERC mono c-Si Bifi Half-cell type

Type Name or Model No. .....:	GCL-M10/72GDFxxx (1/2 cut of 182 mono c-Si cell, 144 cells)	GCL-M10/60GDFxxx (1/2 cut of 182 mono c-Si cell, 120 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	530, 535, 540, 545, 550, 555, 560, 565	445, 450, 455, 460, 465, 470
Nominal short-circuit current at STC [A]	13.68, 13.73, 13.78, 13.83, 13.88, 13.93, 13.98, 14.03	13.68, 13.73, 13.78, 13.83, 13.88, 13.93
Nominal open-circuit voltage at STC [V]	48.68, 48.96, 49.24, 49.52, 49.80, 50.08, 50.36, 50.64	40.25, 40.53, 40.81, 41.09, 41.37, 41.65
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	580, 585, 590, 595, 600, 605, 610, 615	485, 490, 495, 500, 505, 510
Nominal short-circuit current at BNPI [A]	14.95, 15.00, 15.05, 15.10, 15.15, 15.20, 15.25, 15.30	14.95, 15.00, 15.05, 15.10, 15.15, 15.20
Nominal open-circuit voltage at BNPI [V]	49.40, 49.60, 49.80, 50.00, 50.20, 50.40, 50.60, 50.80	40.40, 40.65, 40.90, 41.15, 41.40, 41.65
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Over-current protection rating[A]:	30	30
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
(Stamp and/or signature of TÜV Rheinland)	(Stamp and/or signature of applicant)

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TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 2 of 71

Constructional Data Form for Photovoltaic Modules

Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2278x1134x30/35	1908x1134x30
Module area [m²]	2.58	2.16
Min- creepage distance [mm]	10.4	12.0±1
Number of solar cells..... :	144	120
Cells per bypass diode	48	40
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-M10/54GDFxxx (1/2 cut of 182 mono c-Si cell, 108 cells)	GCL-M12/66GDFxxx (1/2 cut of 210 mono c-Si cell, 132 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	400, 405, 410, 415, 420	630, 635, 640, 645, 650, 655, 660, 665, 670
Nominal short-circuit current at STC [A]	13.52, 13.61, 13.70, 13.80, 13.90	18.02, 18.07, 18.12, 18.17, 18.21, 18.26, 18.31, 18.36, 18.41
Nominal open-circuit voltage at STC [V]	36.78, 36.93, 37.08, 37.23, 37.38	44.60, 44.80, 45.00, 45.20, 45.40, 45.60, 45.80, 46.00, 46.20
Nominal maximum output power at BNPI [W]	435, 445, 450, 455, 455	695, 700, 705, 710, 715, 720, 725, 730, 735
Nominal short-circuit current at BNPI [A]	14.90, 14.98, 15.05, 15.13, 15.20	19.86, 19.90, 19.94, 19.98, 20.02, 20.06, 20.10, 20.14, 20.18
Nominal open-circuit voltage at BNPI [V]	36.90, 37.05, 37.20, 37.35, 37.50	44.75, 44.95, 45.15, 45.35, 45.55, 45.75, 45.95, 46.15, 46.35
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
(Stamp and/or signature of TÜV Rheinland)	(Stamp and/or signature of applicant)

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TÜVRheinland	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 3 of 71

Constructional Data Form for Photovoltaic Modules

Over-current protection rating[A]:	30	35
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	1722x1134x30	2384x1303x30/33/35
Module area [m²]	1.95	3.11
Min- creepage distance [mm]	12.0±1	13.0±1
Number of solar cells..... :	108	132
Cells per bypass diode	36	44
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-M12/60GDFxxx (1/2 cut of 210 mono c-Si cell, 120 cells)	—
Maximum System Voltage [VDC]	1500	—
Nominal maximum output power at STC [W]	575, 580, 585, 590, 595, 600, 605	—
Nominal short-circuit current at STC [A]	18.20, 18.25, 18.30, 18.36, 18.41, 18.46, 18.52	—
Nominal open-circuit voltage at STC [V]	40.64, 40.84, 41.04, 41.24, 41.44, 41.64, 41.84	—
Nominal maximum output power at BNPI [W]	635, 640, 645, 650, 655, 660, 665	—

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Kenny Zhu	Jonathan Zhang
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TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 4 of 71

Constructional Data Form for Photovoltaic Modules

Nominal short-circuit current at BNPI [A]	20.06, 20.10, 20.14, 20.18, 20.22, 20.26, 20.30	—
Nominal open-circuit voltage at BNPI [V]	41.90, 42.10, 42.30, 42.50, 42.70, 42.90, 43.10	—
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	—
Over-current protection rating[A]:	35	—
Classification (IEC 61730)	Class II	—
Fire rating	Class A or C	—
Module $[T_{98}]_{max}$ [°C]	70	—
Pollution degree	I	—
Dimensions (l x w x h) [mm]	2172x1303x33/35	—
Module area [m²]	2.83	—
Min- creepage distance [mm]	13.0±1	—
Number of solar cells..... :	120	—
Cells per bypass diode	40	—
Serial/parallel connection of cells	SP	—
Max. operational altitude [masl]	2000	—
Design load – downwards [Pa]	3600	—
Design load – upwards [Pa]	1600	—
Module family B: Topcon mono c-Si Bifi Half-cell type		
Type Name or Model No. ..... :	GCL-NT12/66GDFxxx (1/2 cut of N-type 210 mono c-Si cell, 132 cells)	GCL-NT12/60GDFxxx (1/2 cut of N-type 210 mono c-Si cell, 120 cells)
Maximum System Voltage [VDC]	1500	1500

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 5 of 71

Constructional Data Form for Photovoltaic Modules

Nominal maximum output power at STC [W]	660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740	600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670
Nominal short-circuit current at STC [A]	18.08, 18.12, 18.16, 18.20, 18.24, 18.27, 18.31, 18.35, 18.38, 18.42, 18.46, 18.51, 18.55, 18.60, 18.64, 18.68, 18.72	18.08, 18.12, 18.17, 18.21, 18.25, 18.30, 18.34, 18.38, 18.42, 18.46, 18.50, 18.54, 18.58, 18.62, 18.67
Nominal open-circuit voltage at STC [V]	46.27, 46.44, 46.61, 46.79, 46.98, 47.17, 47.36, 47.55, 47.74, 47.93, 48.12, 48.36, 48.58, 48.80, 49.02, 49.24, 49.46	42.06, 42.25, 42.45, 42.65, 42.85, 43.04, 43.23, 43.43, 43.62, 43.81, 44.00, 44.20, 44.40, 44.60, 44.81
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810	665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735
Nominal short-circuit current at BNPI [A]	19.99, 20.03, 20.07, 20.11, 20.15, 20.19, 20.23, 20.27, 20.31, 20.35, 20.39, 20.43, 20.47, 20.51, 20.55, 20.59, 20.63	19.99, 20.03, 20.08, 20.12, 20.17, 20.21, 20.26, 20.30, 20.35, 20.40, 20.45, 20.50, 20.54, 20.58, 20.62
Nominal open-circuit voltage at BNPI [V]	46.41, 46.59, 46.77, 46.95, 47.13, 47.31, 47.49, 47.67, 47.85, 48.03, 48.21, 48.39, 48.57, 48.75, 48.93, 49.11, 49.36	42.30, 42.50, 42.70, 42.90, 43.10, 43.30, 43.50, 43.70, 43.90, 44.10, 44.30, 44.50, 44.70, 44.90, 45.10
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	22.32, 22.36, 22.40, 22.44, 22.48, 22.54, 22.58, 22.62, 22.67, 22.71, 22.75, 22.78, 22.82, 22.84, 22.88, 22.92, 22.96	22.32, 22.36, 22.41, 22.45, 22.52, 22.54, 22.61, 22.65, 22.71, 22.77, 22.83, 22.90, 22.94, 22.98, 23.00
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	35	35
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2384x1303x30/33/35	2172x1303x33/35
Module area [m²]	3.11	2.83
Min- creepage distance [mm]	13.0±1	13.0±1

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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Constructional Data Form for Photovoltaic Modules

Number of solar cells..... :	132	120
Cells per bypass diode	44	40
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT10/72GDFxxx (1/2 cut of N-type 182 mono c-Si cell, 144 cells)	GCL-NT10/60GDFxxx (1/2 cut of N-type 182 mono c-Si cell, 120 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615	460, 465, 470, 475, 480, 485, 490, 495, 500
Nominal short-circuit current at STC [A]	13.65, 13.71, 13.77, 13.83, 13.89, 13.95, 14.01, 14.07, 14.13, 14.19, 14.25, 14.28, 14.30, 14.33	13.67, 13.75, 13.82, 13.89, 13.96, 14.03, 14.10, 14.16, 14.22
Nominal open-circuit voltage at STC [V]	50.99, 51.14, 51.29, 51.44, 51.60, 51.75, 51.90, 52.05, 52.20, 52.35, 52.50, 52.75, 53.00, 53.25	42.54, 42.69, 42.84, 43.00, 43.15, 43.30, 43.45, 43.60, 43.75
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	605, 610, 615, 620,625, 630, 635, 640, 645, 650, 655, 660, 665, 670	505, 510, 515, 520, 525, 530, 535, 540, 545
Nominal short-circuit current at BNPI [A]	15.03, 15.09, 15.15, 15.21, 15.27, 15.33, 15.39, 15.45, 15.51, 15.57, 15.63, 15.66, 15.68, 15.71	15.06, 15.13, 15.21, 15.28, 15.35, 15.43, 15.50, 15.57, 15.64
Nominal open-circuit voltage at BNPI [V]	51.10, 51.25, 51.40, 51.55, 51.70, 51.85, 52.00, 52.15, 52.30, 52.45, 52.60, 52.75, 52.90, 53.05	42.67, 42.82, 42.97, 43.12, 43.27, 43.42, 43.57, 43.72, 43.87
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	16.72, 16.78, 16.84, 16.90, 16.96, 17.02, 17.08, 17.14, 17.20, 17.26, 17.32, 17.35, 17.37, 17.40	16.76, 16.82, 16.90, 16.98, 17.06, 17.13, 17.21, 17.29, 17.37
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	30	30

Shanghai (Place) 2026-02-10 (Date)

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Hefei (City) 2026-02-10 (Date)

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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 7 of 71

Constructional Data Form for Photovoltaic Modules

Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2278x1134x30/35 2279x1134x30 2280x1134x30 2281x1134x30 2256x1133x30	1908x1134x30
Module area [m²]	2.58 2.56	2.16
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	144	120
Cells per bypass diode	48	40
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT10/54GDFxxx (1/2 cut of N-type 182 mono c-Si cell, 108 cells)	GCL-NT10/78GDFxxx (1/2 cut of N-type 182 mono c-Si cell, 156 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	415, 420, 425, 430, 435, 440, 445, 450	595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670
Nominal short-circuit current at STC [A]	13.73, 13.80, 13.87, 13.94, 14.01, 14.07, 14.13, 14.19	13.45, 13.50, 13.55, 13.60, 13.65, 13.70, 13.75, 13.80, 13.85, 13.90, 13.95, 14.00, 14.05, 14.10, 14.15, 14.20
Nominal open-circuit voltage at STC [V]	38.35, 38.50, 38.64, 38.90, 39.06, 39.20, 39.34, 39.48	55.60, 55.95, 56.10, 56.25, 56.40, 56.55, 56.70, 56.85, 57.00, 57.15, 57.30, 57.45, 57.68, 57.90, 58.13, 58.35
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0

Shanghai (Place) 2026-02-10 (Date)

Kenny Zhu

(Stamp and/or signature of TÜV Rheinland)

Hefei (City) 2026-02-10 (Date)

(Stamp and/or signature of applicant)

QMF-RT-39008SHG

TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 8 of 71

Constructional Data Form for Photovoltaic Modules

Nominal maximum output power at BNPI [W]	455, 460, 465, 470, 475, 480, 485, 490	655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730
Nominal short-circuit current at BNPI [A]	15.07, 15.16, 15.24, 15.32, 15.40, 15.49, 15.57, 15.65	14.85, 14.90, 14.95, 15.00, 15.05, 15.10, 15.15, 15.20, 15.25, 15.30, 15.35, 15.40, 15.45, 15.50, 15.55, 15.60
Nominal open-circuit voltage at BNPI [V]	38.45, 38.60, 38.75, 38.90, 39.05, 39.20, 39.35, 39.50	55.95, 56.10, 56.25, 56.40, 56.55, 56.70, 56.85, 57.00, 57.15, 57.30, 57.45, 57.60, 57.83, 58.05, 58.28, 58.50
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	16.71, 16.82, 16.91, 17.01, 17.10, 17.23, 17.33, 17.43	16.56, 16.61, 16.66, 16.71, 16.76, 16.81, 16.86, 16.91, 16.96, 17.01, 17.06, 17.11, 17.16, 17.21, 17.26, 17.31
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	30	30
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	1722x1134x30 1800x1134x30	2465x1134x30 2466x1135x30
Module area [m²]	1.95	2.80
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	108	156
Cells per bypass diode	36	52
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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TÜVRheinland	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 9 of 71

Constructional Data Form for Photovoltaic Modules

Design load – upwards [Pa]	1600	1600
Type Name or Model No. ……:	GCL-NT10/72BGDFxxx (1/2 cut of N-type 182 mono c-Si cell, 144 cells)	GCL-NT10/60BGDFxxx (1/2 cut of N-type 182 mono c-Si cell, 120 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	560, 565, 570, 575, 580, 585, 590, 595	470, 475, 480, 485, 490, 495
Nominal short-circuit current at STC [A]	13.37, 13.40, 13.43, 13.46, 13.49, 13.52, 13.55, 13.58	13.39, 13.43, 13.47, 13.51, 13.55, 13.59
Nominal open-circuit voltage at STC [V]	52.20, 52.50, 52.80, 53.10, 53.40, 53.70, 54.00, 54.30	43.81, 44.08, 44.35, 44.62, 44.89, 45.16
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	620,625, 630, 635, 640, 645, 650, 655	520, 525, 530, 535, 540, 545
Nominal short-circuit current at BNPI [A]	14.72, 14.75, 14.78, 14.81, 14.84, 14.87, 14.90, 14.93	14.74, 14.78, 14.82, 14.86, 14.90, 14.94
Nominal open-circuit voltage at BNPI [V]	52.25, 52.55, 52.85, 53.15, 53.45, 53.75, 54.05, 54.35	43.87, 44.14, 44.41, 44.68, 44.95, 45.22
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	16.37, 16.40, 16.43, 16.46, 16.49, 16.52, 16.55, 16.58	16.39, 16.43, 16.47, 16.51, 16.55, 16.59
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	30	30
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2278x1134x30	1908x1134x30

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 10 of 71

Constructional Data Form for Photovoltaic Modules

Module area [m²]	2.58	2.16
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	144	120
Cells per bypass diode	48	40
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT10/54BGDFxxx (1/2 cut of N-type 182 mono c-Si cell, 108 cells)	-
Maximum System Voltage [VDC]	1500	-
Nominal maximum output power at STC [W]	420, 425, 430, 435, 440, 445	-
Nominal short-circuit current at STC [A]	13.39, 13.43, 13.47, 13.51, 13.55, 13.59	-
Nominal open-circuit voltage at STC [V]	39.24, 39.52, 39.80, 40.08, 40.36, 40.64	-
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	-
Nominal maximum output power at BNPI [W]	465, 470, 475, 480, 485, 490	-
Nominal short-circuit current at BNPI [A]	14.74, 14.78, 14.82, 14.86, 14.90, 14.94	-
Nominal open-circuit voltage at BNPI [V]	39.30, 39.58, 39.86, 40.14, 40.42, 40.70	-
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	-
Nominal short-circuit current at BSI/aBSI [A]	16.39, 16.43, 16.47, 16.51, 16.55, 16.59	-
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	-

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
Henry Zhu	Jonathan Zhang
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QMF-RT-39008SHG

TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 11 of 71

Constructional Data Form for Photovoltaic Modules

Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	-
Over-current protection rating[A]:	30	-
Classification (IEC 61730)	Class II	-
Fire rating	Class A or C	-
Module $[T_{98}]_{max}$ [°C]	70	-
Pollution degree	I	-
Dimensions (l x w x h) [mm]	1722x1134x30	-
Module area [m²]	1.95	-
Min- creepage distance [mm]	13.0±1	-
Number of solar cells..... :	108	-
Cells per bypass diode	36	-
Serial/parallel connection of cells	SP	-
Max. operational altitude [masl]	2000	-
Design load – downwards [Pa]	3600	-
Design load – upwards [Pa]	1600	-
Type Name or Model No. ..... :	GCL-NT10/72GDF-Bxxx (1/2 cut of N-type 182 mono c-Si cell, 144 cells)	GCL-NT10/54GDF-Bxxx (1/2 cut of N-type 182 mono c-Si cell, 108 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615	415, 420, 425, 430, 435, 440, 445, 450
Nominal short-circuit current at STC [A]	13.65, 13.71, 13.77, 13.83, 13.89, 13.95, 14.01, 14.07, 14.13, 14.19, 14.25, 14.28, 14.30, 14.33	13.73, 13.80, 13.87, 13.94, 14.01, 14.07, 14.13, 14.19
Nominal open-circuit voltage at STC [V]	50.99, 51.14, 51.29, 51.44, 51.60, 51.75, 51.90, 52.05, 52.20, 52.35, 52.50, 52.75, 53.00, 53.25	38.35, 38.50, 38.64, 38.90, 39.06, 39.20, 39.34, 39.48

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
Jenny Zhu	Jonathan Zhang
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ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 12 of 71

Constructional Data Form for Photovoltaic Modules

Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	605, 610, 615, 620,625, 630, 635, 640, 645, 650, 655, 660, 665, 670	455, 460, 465, 470, 475, 480, 485, 490
Nominal short-circuit current at BNPI [A]	15.03, 15.09, 15.15, 15.21, 15.27, 15.33, 15.39, 15.45, 15.51, 15.57, 15.63, 15.66, 15.68, 15.71	15.07, 15.16, 15.24, 15.32, 15.40, 15.49, 15.57, 15.65
Nominal open-circuit voltage at BNPI [V]	51.10, 51.25, 51.40, 51,55, 51,70, 51,85, 52.00, 52.15, 52.30, 52.45, 52.60, 52.75, 52.90, 53.05	38.45, 38.60, 38.75, 38.90, 39.05, 39.20, 39.35, 39.50
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	16.72, 16.78, 16.84, 16.90, 16.96, 17.02, 17.08, 17.14, 17.20, 17.26, 17.32, 17.35, 17.37, 17.40	16.71, 16.82, 16.91, 17.01, 17.10, 17.23, 17.33, 17.43
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	30	30
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2278x1134x30/35 2279x1134x30 2281x1134x30 2256x1133x30	1722x1134x30 1800x1134x30
Module area [m²]	2.58 2.56	1.95
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	144	108
Cells per bypass diode	48	36
Serial/parallel connection of cells	SP	SP

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 13 of 71

Constructional Data Form for Photovoltaic Modules

Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. .....:	GCL-NT10R/72GDFxxx (1/2 cut of N-type mono c-Si cell, 144 cells)	GCL-NT10R/54GDFxxx & GCL-NT10R/54BGDFxxx (1/2 cut of N-type mono c-Si cell, 108 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625	425, 430, 435, 440, 445, 450, 455, 460, 465
Nominal short-circuit current at STC [A]	14.25, 14.30, 14.35, 14.40, 14.45, 14.50, 14.55, 14.60, 14.65, 14.70, 14.75, 14.80	13.70, 13.75, 13.80, 13.85, 13.90, 13.95, 14.00, 14.05, 14.10
Nominal open-circuit voltage at STC [V]	50.69, 50.84, 50.99, 51.14, 51.29, 51.44, 51.60, 51.75, 51.85, 52.00, 52.15, 52.30	38.75, 39.00, 39.25, 39.50, 39.75, 40.00, 40.25, 40.50, 40.75
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680	470, 475, 480, 485, 490, 495, 500, 505, 510
Nominal short-circuit current at BNPI [A]	15.63, 15.68, 15.73, 15.78, 15.63, 15.88, 15.93, 15.98, 16.03, 16.08, 16.13, 16.18	15.00, 15.05, 15.10, 15.15, 15.20, 15.25, 15.30, 15.35, 15.40
Nominal open-circuit voltage at BNPI [V]	50.65, 50.80, 50.95, 51.10, 51.25, 51.40, 51.55, 51.70, 51.85, 52.00, 52.15, 52.30	38.85, 39.10, 39.35, 39.60, 39.85, 40.10, 40.35, 40.60, 40.85
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	17.32, 17.37, 17.42, 17.47, 17.52, 17.57, 17.62, 17.67, 17.72, 17.77, 17.82, 17.87	16.59, 16.64, 16.69, 16.74, 16.79, 16.84, 16.89, 16.94, 16.99
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	30	30
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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Constructional Data Form for Photovoltaic Modules

Pollution degree	I	I
Dimensions (l x w x h) [mm]	2382x1134x30	1800x1134x30 1762x1134x30
Module area [m²]	2.70	2.04 2.00
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	144	108
Cells per bypass diode	48	36
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT10/44GDF-Txxx (1/2 cut of N-type 182 mono c-Si cell, 88 cells)	GCL-NT12R/66GDFxxx (1/2 cut of N-type mono c-Si cell, 132 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	340, 345, 350, 355, 360	580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650
Nominal short-circuit current at STC [A]	13.73, 13.83, 13.93, 14.03, 14.13	15.55, 15.60, 15.65, 15.70, 15.75, 15.80, 15.85, 15.90, 15.95, 16.00, 16.05, 16.13, 16.17, 16.21, 16.25
Nominal open-circuit voltage at STC [V]	31.28, 31.43, 31.58, 31.73, 31.88	47.20, 47.35, 47.50, 47.65, 47.80, 47.95, 48.10, 48.25, 48.40, 48.55, 48.70, 48.88, 49.15, 49.40, 49.65
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	370, 375, 380, 385, 390	640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710
Nominal short-circuit current at BNPI [A]	14.90, 14.95, 15.00, 15.05, 15.10	17.20, 17.25, 17.30, 17.35, 17.40, 17.45, 17.50, 17.55, 17.60, 17.65, 17.70, 17.75, 17.79, 17.83, 17.87
Nominal open-circuit voltage at BNPI [V]	31.37, 31.52, 31.67, 31.82, 31.97	47.35, 47.50, 47.65, 47.80, 47.95, 48.10, 48.25, 48.40, 48.55, 48.70, 48.85, 49.00, 49.25, 49.45, 49.65
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
Kenny Zhu	Jonathan Zhang
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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 15 of 71

Constructional Data Form for Photovoltaic Modules

Nominal short-circuit current at BSI/aBSI [A]	16.33, 16.32, 16.31, 16.30, 16.29	19.22, 19.27, 19.32, 19.37, 19.42, 19.47, 19.52, 19.57, 19.62, 19.67, 19.72, 19.73, 19.77, 19.81, 19.85
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	30	35
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2278x1134x30	2382x1134x30/33 2383x1135x30 2384x1134x30 2385x1134x30
Module area [m²]	2.58	2.70
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	88	132
Cells per bypass diode	44	44
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT12R/60GDFxxx (1/2 cut of N-type mono c-Si cell, 120 cells)	GCL-NT12R/54GDFxxx (1/2 cut of N-type mono c-Si cell, 108 cells)
Maximum System Voltage [VDC]	1500	1500

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Constructional Data Form for Photovoltaic Modules

Nominal maximum output power at STC [W]	530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590	475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530
Nominal short-circuit current at STC [A]	15.62, 15.68, 15.74, 15.79, 15.84, 15.90, 15.95, 16.00, 16.06, 16.13, 16.17, 16.21, 16.25	15.58, 15.64, 15.70, 15.76, 15.82, 15.88, 15.94, 16.00, 16.06, 16.11, 16.16, 16.21
Nominal open-circuit voltage at STC [V]	42.87, 43.01, 43.15, 43.29, 43.43, 43.57, 43.71, 43.85, 44.05, 44.25, 44.55, 44.81, 45.06	38.55, 38.70, 38.85, 39.00, 39.15, 39.30, 39.45, 39.60, 39.78, 40.05, 40.30, 40.55
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645	525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580
Nominal short-circuit current at BNPI [A]	17.26, 17.32, 17.38, 17.43, 17.48, 17.54, 17.59, 17.65, 17.71, 17.75, 17.79, 17.83, 17.87	17.22, 17.28, 17.34, 17.40, 17.47, 17.53, 17.59, 17.65, 17.71, 17.75, 17.80, 17.85
Nominal open-circuit voltage at BNPI [V]	43.02, 43.16, 43.30, 43.44, 43.58, 43.72, 43.86, 44.00, 44.14, 44.35, 44.65, 44.85, 45.05	38.67, 38.82, 38.97, 39.12, 39.27, 39.42, 39.57, 39.72, 39.87, 40.07, 40.27, 40.47
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	19.26, 19.32, 19.38, 19.43, 19.48, 19.54, 19.59, 19.67, 19.73, 19.73, 19.77, 19.81, 19.85	19.22, 19.28, 19.34, 19.40, 19.49, 19.55, 19.61, 19.67, 19.73, 19.75, 19.80, 19.85
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	35	35
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2172x1134x30	1960x1134x30 1962x1134x30
Module area [m²]	2.46	2.22
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	120	108

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ADDITIONAL DOCUMENTATION

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Constructional Data Form for Photovoltaic Modules

Cells per bypass diode	40	36
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. .....:	GCL-NT12R/48GDFxxx (1/2 cut of N-type mono c-Si cell, 96 cells)	GCL-NT12R/66BGDFxxx (1/2 cut of N-type mono c-Si cell, 132 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475	585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635
Nominal short-circuit current at STC [A]	15.70, 15.75, 15.80, 15.85, 15.90, 15.95, 16.00, 16.05, 16.11, 16.17, 16.23	15.32, 15.34, 15.36, 15.38, 15.40, 15.42, 15.44, 15.46, 15.48, 15.50, 15.52
Nominal open-circuit voltage at STC [V]	33.80, 34.05, 34.30, 34.55, 34.80, 35.05, 35.30, 35.55, 35.80, 36.05, 36.30	47.70, 47.99, 48.28, 48.57, 48.86, 49.15, 49.44, 49.73, 50.02, 50.31, 50.60
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520	645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695
Nominal short-circuit current at BNPI [A]	17.35, 17.40, 17.45, 17.50, 17.55, 17.60, 17.65, 17.72, 17.77, 17.82, 17.87	16.96, 16.98, 17.00, 17.02, 17.04, 17.06, 17.08, 17.10, 17.12, 17.14, 17.16
Nominal open-circuit voltage at BNPI [V]	33.90, 34.15, 34.40, 34.65, 34.90, 35.15, 35.40, 35.60, 35.80, 36.00, 36.20	47.64, 48.12, 48.40, 48.66, 48.96, 49.24, 49.52, 49.80, 50.08, 50.36, 50.64
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	19.37, 19.42, 19.47, 19.52, 19.57, 19.62, 19.67, 19.76, 19.80, 19.84, 19.87	18.96, 18.98, 19.00, 19.02, 19.04, 19.06, 19.08, 19.10, 19.12, 19.14, 19.16
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	35	35
Classification (IEC 61730)	Class II	Class II

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Constructional Data Form for Photovoltaic Modules

Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	1762x1134x30	2382x1134x30/33 2383x1135x30 2385x1134x30
Module area [m²]	2.00	2.70
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	96	132
Cells per bypass diode	32	44
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT12R/60BGDFxxx (1/2 cut of N-type mono c-Si cell, 120 cells)	GCL-NT12R/54BGDFxxx (1/2 cut of N-type mono c-Si cell, 108 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	530, 535, 540, 545, 550, 555, 560, 565, 570, 575	480, 485, 490, 495, 500, 505, 510, 515
Nominal short-circuit current at STC [A]	15.32, 15.34, 15.36, 15.38, 15.40, 15.42, 15.44, 15.46, 15.48, 15.50	15.33, 15.35, 15.38, 15.40, 15.42, 15.44, 15.47, 15.50
Nominal open-circuit voltage at STC [V]	43.25, 43.54, 43.83, 44.12, 44.41, 44.70, 44.99, 45.28, 45.58, 45.88	39.16, 39.45, 39.74, 40.03, 40.32, 40.61, 40.90, 41.19
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	585, 590, 595, 600, 605, 610, 615, 620, 625, 630	530, 535, 540, 545, 550, 555, 560, 565
Nominal short-circuit current at BNPI [A]	16.96, 16.98, 17.00, 17.02, 17.04, 17.06, 17.08, 17.10, 17.12, 17.14	16.97, 16.99, 17.02, 17.04, 17.06, 17.08, 17.10, 17.12

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Nominal open-circuit voltage at BNPI [V]	43.49, 43.76, 44.03, 44.30, 44.57, 44.84, 45.11, 45.38, 45.65, 45.92	39.50, 39.77, 40.04, 40.31, 40.58, 40.85, 41.12, 41.39
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	18.96, 18.98, 19.00, 19.02, 19.04, 19.06, 19.08, 19.10, 19.12, 19.14	18.97, 18.99, 19.02, 19.04, 19.06, 19.08, 19.09, 19.10
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	35	35
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2172x1134x30	1960x1134x30 1962x1134x30
Module area [m²]	2.46	2.22
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	120	108
Cells per bypass diode	40	36
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT12R/48BGDFxxx (1/2 cut of N-type mono c-Si cell, 96 cells)	GCL-NT12R/78GDFxxx (1/2 cut of N-type mono c-Si cell, 156 cells)

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Constructional Data Form for Photovoltaic Modules

Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	425, 430, 435, 440, 445, 450, 455, 460	695, 700, 705, 710, 715, 720, 725, 730, 735, 740 745
Nominal short-circuit current at STC [A]	15.42, 15.44, 15.46, 15.48, 15.50, 15.52, 15.53, 15.54	15.62, 15.66, 15.70, 15.74, 15.78, 15.82, 15.86, 15.90, 15.94, 15.98, 16.02
Nominal open-circuit voltage at STC [V]	34.48, 34.78, 35.08, 35.38, 35.68, 35.98, 36.32, 36.66	56.20, 56.35, 56.50, 56.65, 56.80, 56.95, 57.10, 57.25, 57.40, 57.55, 57.70
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	470, 475, 480, 485, 490, 495, 500, 505	770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820
Nominal short-circuit current at BNPI [A]	16.97, 16.99, 17.02, 17.04, 17.06, 17.08, 17.10, 17.12	17.25, 17.29, 17.33, 17.37, 17.41, 17.45, 17.49, 17.53, 17.57, 17.61, 17.65
Nominal open-circuit voltage at BNPI [V]	34.85, 35.12, 35.39, 35.66, 35.93, 36.20, 36.47, 36.74	56.15, 56.30, 56.45, 56.60, 56.75, 56.90, 57.05, 57.20, 57.35, 57.50, 57.65
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	18.86, 18.88, 18.93, 18.95, 18.97, 18.99, 19.02, 19.05	19.24, 19.28, 19.32, 19.36, 19.40, 19.44, 19.48, 19.52, 19.56, 19.60, 19.64
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	35	35
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	1762x1134x30	2450x1303x33 2465x1303x33
Module area [m²]	2.00	3.19
Min- creepage distance [mm]	13.0±1	13.0±1

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Constructional Data Form for Photovoltaic Modules

Number of solar cells..... :	96	156
Cells per bypass diode	32	52
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT12R/72GDFxxx (1/2 cut of N-type mono c-Si cell, 144 cells)	GCL-NT10/66GDFxxx (1/2 cut of N-type mono c-Si cell, 132 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690	515, 520, 525, 530, 535, 540, 545, 550
Nominal short-circuit current at STC [A]	15.62, 15.66, 15.70, 15.74, 15.78, 15.82, 15.86, 15.90, 15.94, 15.98, 16.02	13.82, 13.90, 13.97, 14.05, 14.12, 14.19, 14.25, 14.31
Nominal open-circuit voltage at STC [V]	51.95, 52.10, 52.25, 52.40, 52.55, 52.70, 52.85, 53.00, 53.15, 53.30, 53.45	46.75, 46.94, 47.12, 47.30, 47.48, 47.66, 47.84, 48.03
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760	570, 575, 580, 585, 590, 595, 600, 605, 610
Nominal short-circuit current at BNPI [A]	17.25, 17.29, 17.33, 17.37, 17.41, 17.45, 17.49, 17.53, 17.57, 17.61, 17.65	15.31, 15.40, 15.48, 15.56, 15.64, 15.72, 15.79, 15.85
Nominal open-circuit voltage at BNPI [V]	51.90, 52.05, 52.20, 52.35, 52.50, 52.65, 52.80, 52.95, 53.10, 53.25, 53.40	46.77, 46.96, 47.14, 47.32, 47.50, 47.68, 47.86, 48.05
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	19.24, 19.28, 19.32, 19.36, 19.40, 19.44, 19.48, 19.52, 19.56, 19.60, 19.64	17.14, 17.23, 17.32, 17.42, 17.50, 17.60, 17.67, 17.74
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	
Over-current protection rating[A]:	35	30

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Constructional Data Form for Photovoltaic Modules

Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module [Tss]max [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2278x1303x33	2096×1134×30
Module area [m²]	2.97	2.38
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	144	132
Cells per bypass diode	48	44
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT12R/66BGFxxx (1/2 cut of N-type mono c-Si cell, 132 cells)	GCL-NT12R/60BGFxxx (1/2 cut of N-type mono c-Si cell, 120 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	610, 615, 620, 625, 630	555, 560, 565, 570
Nominal short-circuit current at STC [A]	15.84, 15.87, 15.90, 15.93, 15.96	15.85, 15.88, 15.92, 15.95
Nominal open-circuit voltage at STC [V]	48.05, 48.30, 48.55, 48.80, 49.05	43.70, 43.95, 44.20, 44.45
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	-	-

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Nominal short-circuit current at BNPI [A]	-	-
Nominal open-circuit voltage at BNPI [V]	-	-
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	-	-
Nominal short-circuit current at BSI/aBSI [A]	-	-
Tolerance of rating at BSI/aBSI (Isc) [%]	-	-
Bifaciality coefficient	-	
Over-current protection rating[A]:	30	30
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2382x1134x30/33 2383x1135x30 2385x1134x30	2172x1134x30
Module area [m²]	2.70	2.46
Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	132	120
Cells per bypass diode	44	40
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600

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Type Name or Model No. ..... :	GCL-NT12R/54BGFxxx (1/2 cut of N-type mono c-Si cell, 108 cells)	GCL-NT12R/48BGFxxx (1/2 cut of N-type mono c-Si cell, 96 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	500, 505, 510, 515	445, 450, 455
Nominal short-circuit current at STC [A]	15.86, 15.90, 15.94, 15.98	15.86, 15.90, 15.94
Nominal open-circuit voltage at STC [V]	39.30, 39.55, 39.80, 40.05	35.05, 35.30, 35.55
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	-	-
Nominal short-circuit current at BNPI [A]	-	-
Nominal open-circuit voltage at BNPI [V]	-	-
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	-	-
Nominal short-circuit current at BSI/aBSI [A]	-	-
Tolerance of rating at BSI/aBSI (Isc) [%]	-	-
Bifaciality coefficient	-	
Over-current protection rating[A]:	30	30
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	1960x1134x30 1962x1134x30	1762x1134x30
Module area [m²]	2.22	2.00

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Min- creepage distance [mm]	13.0±1	13.0±1
Number of solar cells..... :	108	96
Cells per bypass diode	36	32
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. ..... :	GCL-NT10/60GTxxx (1/2 cut of N-type 182 mono c-Si cell, 120 cells)	-
Maximum System Voltage [VDC]	1500	-
Nominal maximum output power at STC [W]	460, 465, 470, 475, 480, 485, 490, 495, 500	-
Nominal short-circuit current at STC [A]	13.67, 13.75, 13.82, 13.89, 13.96, 14.03, 14.10, 14.16, 14.22	-
Nominal open-circuit voltage at STC [V]	42.54, 42.69, 42.84, 43.00, 43.15, 43.30, 43.45, 43.60, 43.75	-
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	-
Nominal maximum output power at BNPI [W]	505, 510, 515, 520, 525, 530, 535, 540, 545	-
Nominal short-circuit current at BNPI [A]	15.06, 15.13, 15.21, 15.28, 15.35, 15.43, 15.50, 15.57, 15.64	-
Nominal open-circuit voltage at BNPI [V]	42.67, 42.82, 42.97, 43.12, 43.27, 43.42, 43.57, 43.72, 43.87	-
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	-
Nominal short-circuit current at BSI/aBSI [A]	16.76, 16.82, 16.90, 16.98, 17.06, 17.13, 17.21, 17.29, 17.37	-
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	-
Bifaciality coefficient	φIsc= 80%±5%, φVoc= 95%±5%, φPmax= 80%±5%	-

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
Kenny Zhu	Jonathan Zhang
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QMF-RT-39008SHG

TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 26 of 71

Constructional Data Form for Photovoltaic Modules

Over-current protection rating[A]:	30	-
Classification (IEC 61730)	Class II	-
Fire rating	Class A or C	-
Module $[T_{99}]_{max}$ [°C]	70	-
Pollution degree	I	-
Dimensions (l x w x h) [mm]	1980x1136x5 1980x1166x35	-
Module area [m²]	2.25 2.31	-
Min- creepage distance [mm]	13.0±1	-
Number of solar cells..... :	120	-
Cells per bypass diode	40	-
Serial/parallel connection of cells	SP	-
Max. operational altitude [masl]	2000	-
Design load – downwards [Pa]	3600	-
Design load – upwards [Pa]	1600	-
Module family C: BC mono c-Si Bifi Half-cell type		
Type Name or Model No. ..... :	GCL-NR12R/66GDFxxx (1/2 cut of BC mono c-Si cell, 132 cells)	GCL-NR12R/48GDFxxx (1/2 cut of BC mono c-Si cell, 96 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665	430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480
Nominal short-circuit current at STC [A]	15.71, 15.77, 15.83, 15.89, 15.95, 16.01, 16.07, 16.13, 16.19, 16.25, 16.31, 16.37, 16.43, 16.49, 16.55, 16.61, 16.67	15.98, 16.03, 16.08, 16.13, 16.18, 16.23, 16.28, 16.33, 16.38, 16.43, 16.48
Nominal open-circuit voltage at STC [V]	48.00, 48.10, 48.20, 48.30, 48.40, 48.50, 48.60, 48.70, 48.80, 48.90, 49.00, 49.10, 49.20, 49.30, 49.40, 49.50, 49.60	34.92, 35.04, 35.16, 35.28, 35.4, 35.52, 35.64, 35.84, 36.04, 36.24, 36.44

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 27 of 71

Constructional Data Form for Photovoltaic Modules

Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720	475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525
Nominal short-circuit current at BNPI [A]	17.20, 17.26, 17.33, 17.39, 17.46, 17.53, 17.59, 17.66, 17.72, 17.79, 17.85, 17.92, 17.99, 18.05, 18.12, 18.18, 18.25	17.50, 17.55, 17.60, 17.65, 17.70, 17.75, 17.80, 17.85, 17.90, 17.95, 18.00
Nominal open-circuit voltage at BNPI [V]	48.00, 48.10, 48.20, 48.30, 48.40, 48.50, 48.60, 48.70, 48.80, 48.90, 49.00, 49.10, 49.20, 49.30, 49.40, 49.50, 49.60	34.92, 35.04, 35.16, 35.28, 35.40, 35.52, 35.64, 35.84, 36.04, 36.24, 36.44
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	19.01, 19.08, 19.16, 19.23, 19.30, 19.37, 19.45, 19.52, 19.59, 19.67, 19.74, 19.81, 19.88, 19.96, 20.03, 20.10, 20.17	19.36, 19.41, 19.46, 19.51, 19.56, 19.61, 19.66, 19.71, 19.76, 19.81, 19.86
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 70%±5%, φVoc= 95%±5%, φPmax= 70%±5%	
Over-current protection rating[A]:	30	30
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I
Dimensions (l x w x h) [mm]	2382x1134x30	1762x1134x30
Module area [m²]	2.70	2.00
Min- creepage distance [mm]	12.0±0.5	12.5±0.5
Number of solar cells..... :	132	96
Cells per bypass diode	44	32
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 28 of 71

Constructional Data Form for Photovoltaic Modules

Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600
Type Name or Model No. .....:	GCL-NR12R/66BGDFxxx (1/2 cut of BC mono c-Si cell, 132 cells)	GCL-NR12R/48BGDFxxx (1/2 cut of BC mono c-Si cell, 96 cells)
Maximum System Voltage [VDC]	1500	1500
Nominal maximum output power at STC [W]	595, 600, 605, 610, 615, 620, 625	435, 440, 445, 450
Nominal short-circuit current at STC [A]	15.67, 15.7, 15.73, 15.76, 15.79, 15.82, 15.85	15.70, 15.74, 15.78, 15.82
Nominal open-circuit voltage at STC [V]	47.92, 48.17, 48.42, 48.67, 48.92, 49.17, 49.42	34.95, 35.20, 35.45, 35.70
Tolerance of rating at STC (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal maximum output power at BNPI [W]	650, 655, 660, 665, 670, 675, 680	475, 480, 485, 490
Nominal short-circuit current at BNPI [A]	17.13, 17.15, 17.17, 17.19, 17.21, 17.23, 17.25	17.14, 17.17, 17.20, 17.23
Nominal open-circuit voltage at BNPI [V]	47.92, 48.17, 48.42, 48.67, 48.92, 49.17, 49.42	34.95, 35.20, 35.45, 35.70
Tolerance of rating at BNPI (Pmpp / Isc / Voc) [%]	±3.0 / ±4.0 / ±3.0	±3.0 / ±4.0 / ±3.0
Nominal short-circuit current at BSI/aBSI [A]	18.91, 18.92, 18.93, 18.94, 18.95, 18.95, 18.96	18.90, 18.92, 18.94, 18.95
Tolerance of rating at BSI/aBSI (Isc) [%]	±4.0	±4.0
Bifaciality coefficient	φIsc= 70%±5%, φVoc= 95%±5%, φPmax= 70%±5%	
Over-current protection rating[A]:	30	30
Classification (IEC 61730)	Class II	Class II
Fire rating	Class A or C	Class A or C
Module $[T_{98}]_{max}$ [°C]	70	70
Pollution degree	I	I

Shanghai (Place) 2026-02-10 (Date)

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Hefei (City) 2026-02-10 (Date)

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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 29 of 71

Constructional Data Form for Photovoltaic Modules

Dimensions (l x w x h) [mm]	2382x1134x30	1762x1134x30
Module area [m²]	2.70	2.00
Min- creepage distance [mm]	12.0±0.5	12.5±0.5
Number of solar cells..... :	132	96
Cells per bypass diode	44	32
Serial/parallel connection of cells	SP	SP
Max. operational altitude [masl]	2000	2000
Design load – downwards [Pa]	3600	3600
Design load – upwards [Pa]	1600	1600

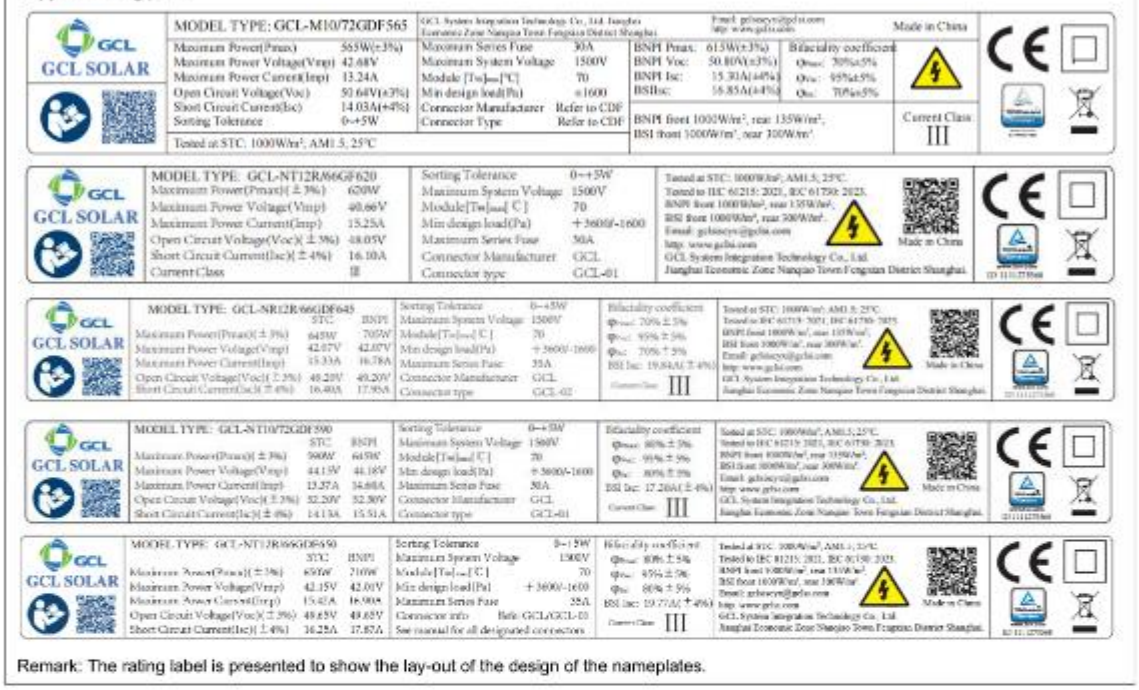
Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TÜV Rheinland of N.A., Inc. use only)	Page 30 of 71

Constructional Data Form for Photovoltaic Modules

Copy of marking plate:



Remark: The rating label is presented to show the lay-out of the design of the nameplates.

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TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 31 of 71

Constructional Data Form for Photovoltaic Modules

List of Critical Components (add lines for multiple material sources)

Object	Manufacturer / trademark	Type / model	Technical data / ratings	Standard (if applicable)	Certificates (if applicable)
Front cover	IRICO Group New Energy Company Limited	AR Coating Semi-tempered Glass	Thickness=1.6mm/2.0mm/ 3.2mm	—	—
	XINYI PV PRODUCTS(ANHUI) HOLDINGS LTD	AR Coating Semi-tempered Glass	Thickness=2.0mm/3.2mm	—	—
	Hunan Kibing Photovoltaic & Electronic Glass Co., Ltd. 1. Zhangzhou Kibing Photovoltaic New Energy Technology Co., Ltd. 2. Ningbo Kibing Photovoltaic Technology Co., Ltd. 3. Zhaotong Kibing Photovoltaic Technology Co., Ltd. 4. SBH Kibing Solar New Materials (M) SDN. BHD. Shaoxing Kibing Photovoltaic Technology Co., Ltd. 5. Zhejiang Ninghai Kibing New Energy Management Co., Ltd.	AR Coating Semi-tempered Glass (float & patterned)	Thickness=2.0mm/1.6mm	—	—
	Triumph New Energy Co., Ltd. 1. CNBM (YIXING) NEW ENERGY RESOURCES CO., LTD. 2. China National Building Materials (Hefei) New Energy Resources Co., Ltd. 3. China Building Materials Tongcheng New Energy Materials Co., Ltd.	AR Coating semi-tempered glass (patterned)	Thickness=1.6mm/2.0mm	—	—
	Xinfuxing Glass Industrial Group Co., Ltd. 1.Guangxi Xinfuxing Silicon Technology Co., Ltd. 2.Fuzhou Xinfuxing Glass Technology Co., Ltd. 3.Anhui Jiuzhou Industrial Co., Ltd.	AR Coating semi-tempered Glass (patterned)	Thickness=2.0 mm	—	—
	CSG(Suzhou)New Energy Management Co., LTD. 1.Anhui CSG New Energy Material Technology Co., Ltd. 2.Guangxi CSG New Energy Material Technology Co., Ltd. 3.Xianning CSG Glass Co., Ltd. 4.Wujiang CSG Glass Co., Ltd. 5.Dongguan CSG Glass Co., Ltd.	AR Coating Semi-tempered Glass	Thickness=2.0mm	—	—
	Hubei Hongnuo Glass Technology Co., Ltd.	**AR Coating Semi-tempered Glass**	**Thickness=2.0mm**	—	—

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 32 of 71

Constructional Data Form for Photovoltaic Modules

Front cover	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufactures listed as below:				
	OEM manufacturer 1: Triumph New Energy Co., Ltd. 1. CNBM (YIXING) NEW ENERGY RESOURCES CO., LTD. 2. China National Building Materials (Hefei) New Energy Resources Co., Ltd. 3. China Building Materials Tongcheng New Energy Materials Co., Ltd.	AR Coating semi-tempered glass (patterned)	Thickness=1.6mm/2.0mm	—	—
	OEM manufacturer 2: IRICO Group New Energy Company Limited	AR Coating Semi-tempered Glass	Thickness=1.6mm/2.0mm/3.2mm	—	—
	OEM manufacturer 3: Xinfuxing Glass Industrial Group Co., Ltd 1.Guangxi Xinfuxing Silicon Technology Co., Ltd. 2.Fuzhou Xinfuxing Glass Technology Co., Ltd. 3.Anhui Jiuzhou Industrial Co., Ltd.	AR Coating semi-tempered Glass (patterned)	Thickness=2.0 mm	—	—
	OEM manufacturer 4: XINYI PV PRODUCTS(ANHUI) HOLDINGS LTD	AR Coating Semi-tempered Glass	Thickness=2.0mm/3.2mm	—	—
	OEM manufacturer 5: Hunan Kibing Photovoltaic & Electronic Glass Co., Ltd. 1. Zhangzhou Kibing Photovoltaic New Energy Technology Co., Ltd. 2. Ningbo Kibing Photovoltaic Technology Co., Ltd. 3. Zhaotong Kibing Photovoltaic Technology Co., Ltd. 4. SBH Kibing Solar New Materials (M) SDN. BHD. Shaoxing Kibing Photovoltaic Technology Co., Ltd. 5. Zhejiang Ninghai Kibing New Energy Management Co., Ltd	AR Coating Semi-tempered Glass (float & patterned)	Thickness=2.0mm/1.6mm	—	—
	OEM manufacturer 6: CSG(Suzhou)New Energy Management Co., LTD. 1.Anhui CSG New Energy Material Technology Co., Ltd. 2.Guangxi CSG New Energy Material Technology Co., Ltd. 3.Xianning CSG Glass Co., Ltd. 4.Wujiang CSG Glass Co., Ltd. 5.Dongguan CSG Glass Co., Ltd.	AR Coating Semi-tempered Glass	Thickness=2.0mm	—	—
	OEM manufacturer 7: Hubei Hongnuo Glass Technology Co., Ltd.	**AR Coating semi tempered Glass (patterned)**	**Thickness=2.0mm**	—	—

Shanghai (Place) 2026-02-10 (Date)
Kenny Zhu
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Hefei (City) 2026-02-10 (Date)
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TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 33 of 71

Constructional Data Form for Photovoltaic Modules

Rear cover	IRICO Group New Energy Company Limited	glazed semi-tempered glass (with white or black grid) (patterned)	Thickness= 1.6mm/2.0mm/3.2mm	—	—
	XINYI PV PRODUCTS(ANHUI) HOLDINGS LTD	glazed semi-tempered glass (with white grid) (patterned)	Thickness=1.6mm/2.0mm	—	—
	Hunan Kibing Photovoltaic & Electronic Glass Co., Ltd. 1. Zhangzhou Kibing Photovoltaic New Energy Technology Co., Ltd. 2. Ningbo Kibing Photovoltaic Technology Co., Ltd. 3. Zhaotong Kibing Photovoltaic Technology Co., Ltd. 4. SBH Kibing Solar New Materials (M) SDN. BHD. Shaoxing Kibing Photovoltaic Technology Co., Ltd. 5. Zhejiang Ninghai Kibing New Energy Management Co., Ltd	glazed semi-tempered glass (with white or black grid) (float & patterned)	Thickness=2.0mm/1.6mm	—	—
	Triumph New Energy Co., Ltd. 1. CNBM (YIXING) NEW ENERGY RESOURCES CO., LTD. 2. China National Building Materials (Hefei) New Energy Resources Co., Ltd. 3. China Building Materials Tongcheng New Energy Materials Co., Ltd.	glazed semi-tempered glass (with white or black grid) (patterned)	Thickness=1.6mm/2.0mm	—	—
	Xinfuxing Glass Industrial Group Co., Ltd 1.Guangxi Xinfuxing Silicon Technology Co., Ltd. 2.Fuzhou Xinfuxing Glass Technology Co., Ltd. 3.Anhui Jiuzhou Industrial Co., Ltd.	glazed semi-tempered glass/ semi-tempered glass (float & patterned)	Thickness=2.0 mm	—	—
	CSG(Suzhou)New Energy Management Co., LTD. 1.Anhui CSG New Energy Material Technology Co., Ltd. 2.Guangxi CSG New Energy Material Technology Co., Ltd. 3.Xianning CSG Glass Co., Ltd. 4.Wujiang CSG Glass Co., Ltd. 5.Dongguan CSG Glass Co., Ltd.	glazed semi-tempered glass (with white grid) (patterned)	Thickness=2.0mm	—	—
	Hubei Hongnuo Glass Technology Co., Ltd.	**glazed semi-tempered glass (with white grid) (patterned)**	**Thickness=2.0mm**	—	—

Shanghai (Place) 2026-02-10 (Date)	Hefei (City) 2026-02-10 (Date)
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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 34 of 71

Constructional Data Form for Photovoltaic Modules

Rear cover	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufactures listed as below:				
	OEM manufacturer 1: Triumph New Energy Co., Ltd. 1. CNBM (YIXING) NEW ENERGY RESOURCES CO., LTD. 2. China National Building Materials (Hefei) New Energy Resources Co., Ltd. 3. China Building Materials Tongcheng New Energy Materials Co., Ltd.	glazed semi-tempered glass (with white or black grid) (patterned)	Thickness=1.6mm/2.0mm	—	—
	OEM manufacturer 2: IRICO Group New Energy Company Limited	glazed semi-tempered glass (with white or black grid) (patterned)	Thickness= 1.6mm/2.0mm/3.2mm	—	—
	OEM manufacturer 3: Xinfuxing Glass Industrial Group Co., Ltd 1.Guangxi Xinfuxing Silicon Technology Co., Ltd. 2.Fuzhou Xinfuxing Glass Technology Co., Ltd. 3.Anhui Jiuzhou Industrial Co., Ltd.	glazed semi-tempered glass/ semi-tempered glass (float & patterned)	Thickness=2.0 mm	—	—
	OEM manufacturer 4: XINYI PV PRODUCTS(ANHUI) HOLDINGS LTD	glazed semi-tempered glass (with white grid) (patterned)	Thickness=1.6mm/2.0mm	—	—
	OEM manufacturer 5: Hunan Kibing Photovoltaic & Electronic Glass Co., Ltd. 1. Zhangzhou Kibing Photovoltaic New Energy Technology Co., Ltd. 2. Ningbo Kibing Photovoltaic Technology Co., Ltd. 3. Zhaotong Kibing Photovoltaic Technology Co., Ltd. 4. SBH Kibing Solar New Materials (M) SDN. BHD. Shaoxing Kibing Photovoltaic Technology Co., Ltd. 5. Zhejiang Ninghai Kibing New Energy Management Co., Ltd	glazed semi-tempered glass (with white or black grid) (float & patterned)	Thickness=2.0mm/1.6mm	—	—
	OEM manufacturer 6: CSG(Suzhou)New Energy Management Co., LTD. 1.Anhui CSG New Energy Material Technology Co., Ltd. 2.Guangxi CSG New Energy Material Technology Co., Ltd. 3.Xianning CSG Glass Co., Ltd. 4.Wujiang CSG Glass Co., Ltd. 5.Dongguan CSG Glass Co., Ltd.	glazed semi-tempered glass (with white grid) (patterned)	Thickness=2.0mm	—	—
	OEM manufacturer 7: Hubei Hongnuo Glass Technology Co., Ltd.	**glazed semi-tempered glass (with white grid) (patterned)**	**Thickness=2.0mm**	—	—
Remarks: Front cover and Rear cover with Thickness = 1.6mm can only be used on GCL-NT10/54GDFxxx, GCL-NT10/54GDF-Bxxx, GCL-NT10R/54GDFxxx, GCL-NT10R/54BGDFxxx, GCL-NT12R/54GDFxxx, GCL-NT12R/48GDFxxx, GCL-NT12R/54BGDFxxx, GCL-NT12R/48BGDFxxx, GCL-NT12R/54BGFxxx, GCL-NT12R/48BGFxxx					

Shanghai (Place) 2026-02-10 (Date)

Kenny Zhu

(Stamp and/or signature of TÜV Rheinland)

Hefei (City) 2026-02-10 (Date)

Jonathan Zhang

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TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 35 of 71

Constructional Data Form for Photovoltaic Modules

Encapsulation material 1 (will use with bifacial perc GCL solar cell)	KUNSHAN TIANYANG NEW MATERIAL CO., LTD.	JCC-105P-T (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		JCC-305T (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 2 (will use with bifacial N type GCL solar cell)	CROWN ADVANCED METERIAL CO., LTD	ISARD 3180 (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		ISARD 2180 (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 3 (will use with bifacial N type GCL solar cell)	Changzhou Sveck PV New Material Co., Ltd.	CO-556 (between front cover and cells)	Thickness=0.55±0.1mm Thickness=0.50±0.1mm	—	—
		SV-15296P (between cells and rear cover)	Thickness=0.55±0.1mm Thickness=0.50±0.1mm	—	—
Encapsulation material 4 (will use with bifacial perc GCL solar cell)	Hangzhou First Applied Material Co., Ltd.	F406P (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		EP304 (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 5 (will use with bifacial perc GCL solar cell)	Changzhou Betterial film technologies Co., Ltd	B601HP (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		B602M (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 6 (will use with bifacial perc GCL solar cell)	ZHEJIANG SINOPONT TECHNOLOGY CO., LTD.	EVA9110T (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		PO8110 (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 7 (will use with bifacial N type GCL solar cell)	ZHEJIANG SINOPONT TECHNOLOGY CO., LTD.	PO8110 (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		EVA9110T (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 8 (will use with bifacial perc GCL solar cell)	Cybrid Technologies Inc.	Cybright T11 (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		Cybright T22H (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 9 (will use with bifacial N type GCL solar cell)	Cybrid Technologies Inc.	Cybright T22 (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		Cybright T11 (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 10 (will use with bifacial N type GCL solar cell)	Cybrid Technologies Inc.	Cybright T22H (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		Cybright T11 (between cells and rear cover)	Thickness=0.55±0.1mm	—	—

Shanghai (Place) 2026-02-10 (Date)

Kenny Zhu

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Hefei (City) 2026-02-10 (Date)

Jonathan Zhang

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QMF-RT-39008SHG

TÜVRheinland®

Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 36 of 71

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Encapsulation material 11 (will use with bifacial N type GCL solar cell)	Changzhou Betterial film technologies Co., Ltd	B602M (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		B601HP (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 12 (will use with bifacial N type GCL solar cell)	Changzhou Betterial film technologies Co., Ltd	B601HP (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		B601HP (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 13 (will use with bifacial N type GCL solar cell)	Changzhou Betterial film technologies Co., Ltd	B602 (between front cover and cells)	Thickness=0.60±0.1mm	—	—
		B601HP (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 14 (will use with bifacial N type GCL solar cell)	Suzhou Yisheng Optical Materials Co., Ltd	Inshine EP801 (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		Inshine E701 (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 15 (will use with bifacial N type GCL solar cell)	Suzhou Yisheng Optical Materials Co., Ltd	Inshine E701 (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		Inshine E701 (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 16 (will use with bifacial N type GCL solar cell)	Changzhou Sveck PV New Material Co., Ltd.	SV-15296P (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		SV-15296P (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 17 (will use with bifacial N type GCL solar cell)	Hangzhou First Applied Material Co., Ltd.	EP3D4 (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		F406P (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 18 (will use with bifacial N type GCL solar cell)	Hangzhou First Applied Material Co., Ltd.	F406PS (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		F406PS (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 19 (will use with bifacial N type GCL solar cell)	KUNSHAN TIANYANG NEW MATERIAL CO., LTD.	JCC-105P-T (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		JCC-105P-T (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 20 (will use with bifacial N type GCL solar cell)	ZHEJIANG SINOPONT TECHNOLOGY CO., LTD.	EVA9110T (between front cover and cells)	Thickness=0.56±0.1mm	—	—
		EVA9110T (between cells and rear cover)	Thickness=0.56±0.1mm	—	—

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Encapsulation material 21 (will use with bifacial N type GCL solar cell)	Suzhou Hondol New Material Co., Ltd.	HEPE1 (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		HEVA1 (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 22 (will use with bifacial N type GCL solar cell)	Jiangsu Lushan New Material Co., Ltd.	S102 (near glass)	Thickness=0.50±0.1mm	—	—
		EV1050G2 (near back sheet)	Thickness=0.50±0.1mm	—	—
Encapsulation material 23 (will use with bifacial N type GCL solar cell)	Jiangsu Lushan New Material Co., Ltd.	S102 (near glass)	Thickness=0.50±0.1mm	—	—
		EV1050G7 (near back sheet) Color: black	Thickness=0.50±0.1mm	—	—
Encapsulation material 24 (will use with bifacial N type GCL solar cell)	Hangzhou First Applied Material Co., Ltd.	TF4 (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		TF4 (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 25 (will use with bifacial N type GCL solar cell)	Anhui Exciton Technology Co., Ltd.	POT (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		EVT (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 26 (will use with bifacial BC and N type GCL solar cell)	ZHEJIANG SINOPONT TECHNOLOGY CO., LTD	PO8110 (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		PO8110 (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 27 (will use with bifacial N type GCL solar cell)	Hefei GCL System Integration New Energy Technology Co., Ltd. / Funing GCL System Integration Technology Co., Ltd. OEM manufacturer: CROWN ADVANCED METERIAL CO., LTD ZHEJIANG SINOPONT TECHNOLOGY CO., LTD. Cybrid Technologies Inc. Suzhou Yisheng Optical Materials Co., Ltd Suzhou Hondol New Material Co., Ltd. Jiangsu Lushan New Material Co., Ltd.	GCL-PE-x (x=9) (between front cover and cells)	Thickness=0.55±0.1mm Thickness=0.50±0.1mm	—	—
		GCL-EA-x (x=9) (between cells and rear cover)	Thickness=0.55±0.1mm Thickness=0.50±0.1mm	—	—
Encapsulation material 28 (will use with bifacial perc GCL solar cell)		GCL-EA-x (x=2) (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		GCL-PO-x (x=2) (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 29 (will use with bifacial N type GCL solar cell)		GCL-PO-x (x=2) (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		GCL-EA-x (x=2) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 30 (will use with bifacial perc GCL solar cell)		GCL-EA-x (x=5) (between front cover and cells)	Thickness=0.55±0.1mm Thickness=0.50±0.1mm	—	—
		GCL-PE-x (x=5) (between cells and rear cover)	Thickness=0.55±0.1mm Thickness=0.50±0.1mm	—	—

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Encapsulation material 31 (will use with bifacial N type GCL solar cell)		GCL-PO-x (x=5) (between front cover and cells)	Thickness=0.50±0.1mm Thickness=0.70±0.1mm	—	—
		GCL-EA-x (x=5) (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 32 (will use with bifacial N type GCL solar cell)		GCL-PE-x (x=5) (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		GCL-EA-x (x=5) (between cells and rear cover)	Thickness=0.55±0.1mm Thickness=0.50±0.1mm	—	—
Encapsulation material 33 (will use with bifacial N type GCL solar cell)		GCL-EA-x (x=8) (between front cover and cells)	Thickness = 0.55±0.1mm Thickness=0.50±0.1mm	—	—
		GCL-EA-x (x=8) (between cells and rear cover)	Thickness=0.55±0.1mm Thickness=0.50±0.1mm	—	—
Encapsulation material 34 (will use with bifacial N type GCL solar cell)		GCL-EA-x (x=2) (between front cover and cells)	Thickness=0.56±0.1mm	—	—
		GCL-EA-x (x=2) (between cells and rear cover)	Thickness=0.56±0.1mm	—	—
Encapsulation material 35 (will use with bifacial N type GCL solar cell)		GCL-PE-x (x=10) (between front cover and cells)	Thickness=0.5±0.1mm	—	—
		GCL-EA-x (x=10) (between cells and rear cover)	Thickness=0.5±0.1mm	—	—
Encapsulation material 36 (will use with bifacial perc GCL solar cell)		GCL-PE-x (x=6) (near glass)	Thickness=0.5±0.1mm	—	—
		GCL-EA-x (x=6) (near back sheet)	Thickness=0.5±0.1mm	—	—
Encapsulation material 37 (will use with bifacial N type GCL solar cell)		GCL-PE-x (x=6) (near glass)	Thickness=0.5±0.1mm	—	—
		GCL-EW-y (y=6) (near back sheet) Color: black	Thickness=0.5±0.1mm	—	—
Encapsulation material 38 (will use with bifacial N type GCL solar cell)		GCL-PE-x (x=4) (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		GCL-EA-x (x=4) (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 39 (will use with bifacial N type GCL solar cell)		GCL-EA-x (x=4) (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		GCL-EA-x (x=4) (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 40 (will use with bifacial N type GCL solar cell)		GCL-PE-x (x=11) (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		GCL-EA-x (x=11) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—

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Encapsulation material 41 (will use with bifacial N type GCL solar cell)		GCL-EA-x (x=3) (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		GCL-PE-x (x=3) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 42 (will use with bifacial N type GCL solar cell)		GCL-PE-x (x=3) (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		GCL-EA-x (x=3) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 43 (will use with bifacial N type GCL solar cell)		GCL-EA-x (x=3) (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		GCL-EA-x (x=3) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 44 (will use with bifacial N type GCL solar cell)		GCL-PO-x (x=3) (between front cover and cells)	Thickness=0.60±0.1mm	—	—
		GCL-EA-x (x=3) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 45 (will use with bifacial N type GCL solar cell)		GCL-PO-x (x=2) (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		GCL-EA-x (x=2) (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 46 (will use with bifacial BC and N type GCL solar cell)		GCL-PE-x (x=4) (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		GCL-PE-x (x=4) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 47 (will use with bifacial N type GCL solar cell)		GCL-PE-x (x=3) (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		GCL-PE-x (x=3) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 48 (will use with bifacial N type GCL solar cell)	Suzhou Yisheng Optical Materials Co., Ltd	Inshine EP801 (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		Inshine EP801 (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 49 (will use with bifacial BC and N type GCL solar cell)	Changzhou Sveck PV New Material Co., Ltd.	CO-556 (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		CO-556 (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 50 (will use with bifacial N type GCL solar cell)	Changzhou Betterial film technologies Co., Ltd	B602M (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		B602M (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 51 (will use with bifacial N type GCL solar cell)	Hefei GCL System Integration New Energy Technology Co., Ltd. / Funing GCL System Integration Technology Co., Ltd. OEM manufacturer:	GCL-PE-x(x=8) (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		GCL-EA-x(x=8) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—

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Encapsulation material 52 (will use with bifacial BC and N type GCL solar cell)	CROWN ADVANCED METERIAL CO., LTD ZHEJIANG SINOPONT TECHNOLOGY CO., LTD. Cybrid Technologies Inc. Suzhou Yisheng Optical Materials Co., Ltd Suzhou Hondol New Material Co., Ltd. Jiangsu Lushan New Material Co., Ltd. Changzhou Sveck PV New Material Co., Ltd. Anhui Exciton Technology Co., Ltd. Changzhou Betterial film technologies Co., Ltd.	GCL-PO-x(x=2) (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		GCL-PO-x(x=2) (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 53 (will use with bifacial N type GCL solar cell)		GCL-PE-x(x=8) (between front cover and cells)	Thickness=0.55±0.1mm	—	—
		GCL-PE-x(x=8) (between cells and rear cover)	Thickness=0.55±0.1mm	—	—
Encapsulation material 54 (will use with bifacial BC and N type GCL solar cell)		GCL-PE-x (x=2) (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		GCL-EW-x (x=2) (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Encapsulation material 55 (will use with bifacial BC and N type GCL solar cell)	ZHEJIANG SINOPONT TECHNOLOGY CO., LTD.	PO8110 (between front cover and cells)	Thickness=0.50±0.1mm	—	—
		EVA7100 (between cells and rear cover)	Thickness=0.50±0.1mm	—	—
Solar cell	GCL System Integration Technology Co., Ltd. OEM manufacturer: Tongwei Solar Co., Ltd: 1. Tongwei Solar (Chengdu) Co., Ltd 2. Tongwei Solar (Anhui) Co., Ltd 3. Tongwei Solar (Jintang) Co., Ltd 4. Tonghe New Energy (Jintang) Co., Ltd Solarspace Technology Co., Ltd: 1. Jiangsu Longheng New Energy Co., Ltd. 2. Solarspace New Energy (Xuzhou) Co., Ltd. 3. Xuzhou Zhonghui Photovoltaic Technology Co., Ltd. 4. Jiangsu Huaheng New Energy Co., Ltd. 5. Solarspace New Energy (Chuzhou) Co., Ltd. 6. Solarspace Photovoltaic (Shanghai) Co., Ltd. Anhui Yingfa Rui Neng Stock Technology Co., Ltd.: 1. Anhui Yingfa Desheng Technology Co., LTD 2. Yibin Yingfa Deyao Technology Co., Ltd Runergy New Energy (Shanghai) Co., Ltd.: 1. Jiangsu Runergy PV Technology Co., Ltd. 2. Jiangsu Runergy Century PV Technology Co., Ltd.	GCL-P-M182Bi (10BB) (dotted 10 busbars, bifacial mono cell) (used with EVA 1,4,5,6,8)	182mm×91±0.5mm 145±14.5μm	—	—
			182mm×91.875±0.5mm 145±14.5μm	—	—
		GCL-P-M182Bi (16BB) (dotted 16 busbars, bifacial mono cell) (used with EVA 1,4,5,6,8)	182mm×91±0.5mm 145±14.5μm	—	—
			182mm×91.875±0.5mm 145±14.5μm	—	—

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	GCL System Integration Technology Co., Ltd. OEM manufacturer: Tongwei Solar Co., Ltd: 1. Tongwei Solar (Chengdu) Co., Ltd 2. Tongwei Solar (Anhui) Co., Ltd 3. Tongwei Solar (Jintang) Co., Ltd 4. Tonghe New Energy (Jintang) Co., Ltd Solarspace Technology Co., Ltd: 1. Jiangsu Longheng New Energy Co., Ltd. 2. Solarspace New Energy (Xuzhou) Co., Ltd. 3. Jiangsu Huaheng New Energy Co., Ltd. 4. Solarspace New Energy (Chuzhou) Co., Ltd. 5. Solarspace Photovoltaic (Shanghai) Co., Ltd. Runergy New Energy (Shanghai) Co., Ltd.: 1. Jiangsu Runergy Century PV Technology Co., Ltd.	GCL-P-M210Bi (12BB) (dotted 12 busbars, bifacial mono cell) (used with EVA 1,4,5,6,8)	210mm×105mm ±0.5mm 145±14.5μm	—	—
			210mm×105mm ±0.5mm 175±17.5μm	—	—
	GCL System Integration Technology Co., Ltd. OEM manufacturer: Wuhu GCL System Integration New Energy Technology Co., Ltd. WuHu GCL System Integration Technology Co., Ltd. Chuzhou Jietai New Energy Technology Co., Ltd. Huaian Jietai New Energy Technology Co., Ltd SunSync Solar Technology (Yibin) Co., Ltd. Sichuan SunSync Photovoltaic Technology Co., Ltd. Hongyuan New Material (Xuzhou) Co., Ltd. Xuzhou Topsolar New Energy Co., Ltd. Changzhou Shichuang Energy Co., Ltd. Heifei Qingdian Changxin Solar Technology CO., LTD. Chuzhou Aiko Solar Technology Co., Ltd. Tianjin Aiko Solar Technology Co., Ltd. Zhejiang Aiko Solar Technology Co., Ltd. Jiangsu Sunrev Energy Technology Co., Ltd.	GCL-N-M182Bi (16BB) (dotted 16 busbars, N-type bifacial mono cell) (used with EVA 2,3,7,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,27,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55)	182mm×91±0.5mm 130±13μm	—	—
			182mm×91.875±0.5mm 130±13μm		
			182mm×95.8±0.5mm 130±13μm		
			182.2mm×94±0.5mm 130±13μm		
			182.2mm×93.4±0.5mm 130±13μm		
			182.2mm×91.875±0.5mm 130±13μm		
			182.2mm×95.8±0.5mm 130±13μm		

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	Zhejiang Lunisolar Co., Ltd. Tongwei Solar Co., Ltd: 1. Tongwei Solar (Meishan) Co., Ltd 2. Tongwei Solar (Pengshan) Co., Ltd 3. Tongwei Solar (Jintang) Co., Ltd 4. Tonghe New Energy (Jintang) Co., Ltd 5. Tongwei Solar (Chengdu) Co., Ltd. Solarspace Technology Co., Ltd: 1. Solarspace New Energy (Chuzhou) Co., Ltd. 2. Solarspace New Energy (Xuzhou) Co., Ltd. 3. Jiangsu Huaheng New Energy Co., Ltd. 4. Jiangsu Longheng New Energy Co., Ltd. 5. Solarspace Photovoltaic (Shanghai) Co., Ltd. Anhui Yingfa Rui Neng Stock Technology Co., Ltd.: 1. Yibin Yingfa Deyao Technology Co., Ltd Runergy New Energy (Shanghai) Co., Ltd.: 1. Jiangsu Runergy PV Technology Co., Ltd. 2. Yunnan Runergy Century PV Technology Co., Ltd. Anhui Shijing SolarPower Technology Co.,Ltd. ZHEJIANG FORTUNE ENERGY CO., LTD.	GCL-N-M210Bi (18BB) (dotted 18 busbars, N-type bifacial mono cell) (used with EVA 2,3,7,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,27,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55)	210mmx105mm ±0.5 mm 130μm±13μm	—	—
		GCL-N-M210RBi (16BB) (dotted 16 busbars, N-type bifacial mono cell) (used with EVA 2,3,7,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,27,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55)	182mmx105mm ±0.5 mm 130μm±13μm 182.3mmx105mm ±0.5 mm 130μm±13μm 182.3mmx106.1mm ±0.5 mm 130μm±13μm	—	—
		GCL-N-M210RBi (20BB) (dotted 20 busbars, N-type bifacial mono cell) (used with EVA 2,3,7,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,27,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55)	182.3mmx105mm ±0.5 mm 130μm±13μm	—	—
		GCL-N-M210RBi (18BB) (dotted 18 busbars, N-type bifacial mono cell) (used with EVA 2,3,7,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,27,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55)	210mmx91.15mm ±0.5 mm 130μm±13μm 210mmx91mm ±0.5 mm 130μm±13μm	—	—
	GCL System Integration Technology Co., Ltd. OEM manufacturer: Wuhu GCL System Integration New Energy Technology Co., Ltd.	GCL-N-M210RBi (20BB) (dotted 20 busbars, BC bifacial mono cell) (used with EVA 26,46,49,52,54,55)	182.2mmx210mm ±0.5mm, 150±15μm	—	—
		GCL-N-M210RBi (19BB) (dotted 19 busbars, BC bifacial mono cell) (used with EVA 26,46,49,52,54,55)	182.2mmx210mm ±0.5mm, 150±15μm	—	—

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Jonathan Zhang

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TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 43 of 71

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Frame parts	Anhui Xinbo Technology Co., Ltd Jiangsu Karen Aluminum Co., Ltd. Changzhou Kaihong Aluminum Industry Co., Ltd Jiangsu Jiangnan Chuangjia Aluminum Co., Ltd PanAsia Enterprises (Nanyang) Company Limited YONZ TECHNOLOGY (CHANGZHOU) CO., LTD. CITIC Bohai Aluminum Industries Holding Company Limited. Jiangyin Yuanshuo Metal Technology Co., LTD. WUXI KAMA ELECTRIC MANUFACTURING CO., LTD. Rui'an Jiangnan Aluminum Co., Ltd. Anhui Xinbo Technology Co., Ltd. Henan Yuguang New Energy Materials Co., Ltd. Jiangyin Degao New Energy Technology Co., Ltd Changshu R&D Solar Equipment Co.,Ltd Anhui Huilong Group Huilv New Material Technology Co. LTD Jiangsu Akcome Science & Technology Co.,Ltd. Jiangyin YuanBo Metal Technology Co., Ltd. Anhui Krant Aluminum Products Co., Ltd	6005-T6	Anodized Aluminum Alloy, 35mmx30mm (long side) 35mmx12mm (short side) Drawing No. GCL-XXJC-2-RD-5013 GCL-XXJC-2-RD-5014 35x30mm Drawing No. GCL-XXJC-2-RD-5028 (long side) GCL-XXJC-2-RD-5029 (short side) 30mmx30mm (long side) 30mmx15mm (short side) 30mmx12mm (short side) GCL-XXJC-2-RD-5043 GCL-XXJC-2-RD-5044 35mmx32mm (long side) 35mmx14mm (short side) GCL-XXJC-2-RD-5023 GCL-XXJC-2-RD-5024 GCL-XXJC-2-RD-5098 GCL-XXJC-2-RD-5194 GCL-XXJC-2-RD-5195 GCL-XXJC-2-RD-5316 30mmx35mm (long side) 30mmx14.5mm (short side) Drawing No. GCL-XXJC-2-RD-1925 GCL-XXJC-2-RD-1926 GCL-XXJC-2-RD-1865 GCL-XXJC-2-RD-1866 GCL-XXJC-2-RD-5369 GCL-XXJC-2-RD-5601 GCL-XXJC-2-RD-5602 GCL-XXJC-2-RD-6503 35mmx35mm (long side) 35mmx14.5mm (short side) Drawing No. GCL-XXJC-2-RD-1866 GCL-XXJC-2-RD-1865 35mmx16mm (long side) 35mmx20mm (short side) Drawing No. 25mmx31.5mm (long side) 26.3mmx24mm (short side) 25mmx24mm (long side) 35mmx32mm (long side) 35mmx14mm (short side)	—	—
Frame parts	Hefei GCL System Integration New Energy Technology Co., Ltd. Funing GCL System Integration Technology Co., Ltd. OEM manufacturer: 1.Jiangsu Karen Aluminum Co., Ltd. 2.Changzhou Kaihong Aluminum				

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	Industry Co., Ltd 3.Jiangsu Jiangnan Chuangjia Aluminum Co., Ltd 4.PanAsia Enterprises（Nanyang）Company Limited. 5.YONZ TECHNOLOGY (CHANGZHOU) CO., LTD. 6.CITIC Bohai Aluminum Industries Holding Company Limited. 7.Jiangyin Yuanshuo Metal Technology Co., LTD. 8.WUXI KAMA ELECTRIC MANUFACTURING CO., LTD. 9.Rui'an Jiangnan Aluminum Co., Ltd. 10.Anhui Xinbo Technology Co., Ltd. 11.Henan Yuguang New Energy Materials Co., Ltd. 12.Jiangyin Degao New Energy Technology Co., Ltd 13.Changshu R&D Solar Equipment Co.,Ltd 14.Anhui Huilong Group Huilv New Material Technology Co. LTD 15.Jiangsu Akcome Science & Technology Co., Ltd. 16.Jiangyin YuanBo Metal Technology Co., Ltd. 17.Anhui Krant Aluminum Products Co., Ltd 18.JIANGSU SULV NEW MATERIAL TECHNOLOGY CO., LTD. 19. Cloud Live Technology Group Co., Ltd. (1. Cloud Live Aikome (Gaoyou) Metal Co., Ltd.)		30mmx32mm (long side) 30mmx14mm (short side) Drawing No. GCL-XXJC-2-RD-5203 GCL-XXJC-2-RD-5204 GCL-XXJC-2-RD-5257 GCL-XXJC-2-RD-5364 GCL-XXJC-2-RD-5365 GCL-XXJC-2-RD-5285 30mmx30mm (long side) 30mmx14.4mm (short side) Drawing No. (for 182 module): GCL-XXJC-2-RD-5402 GCL-XXJC-2-RD-5403 33mmx28.5mm (long side) 33mmx23mm (short side) Drawing No. (for 210 module): GCL-XXJC-2-RD-5408 GCL-XXJC-2-RD-5410 GCL-XXJC-2-RD-5461 **GCL-XXJC-2-RD-5705** **GCL-XXJC-2-RD-5706** **GCL-XXJC-2-RD-5749** **GCL-XXJC-2-RD-6756** 33mmx28.5mm (long side) 33mmx10.5mm (short side) Drawing No. (for 210 module): GCL-XXJC-2-RD-5912 GCL-XXJC-2-RD-6037 GCL-XXJC-2-RD-6225 GCL-XXJC-2-RD-6523 **GCL-XXJC-2-RD-6814** 800x10.2x20mm, 40x25.6mm, 40x25.2mm 40x17mm (long side) 40x29.2mm (short side) 35x37mm (long side) 35x14mm (short side) 40x25.6mm (long side) 40x25.2mm (short side) 800x9.5x12mm, 30x28.5mm (long side) 30x11.6mm (short side) 33x28.5mm (long side) 33x11.6mm (short side) GCL-XXJC-2-RD-5912 GCL-XXJC-2-RD-5913 GCL-XXJC-2-RD-6037 GCL-XXJC-2-RD-6225		

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			GCL-XXJC-2-RD-6582 GCL-XXJC-2-RD-6417 GCL-XXJC-2-RD-6418 35x28.5mm (long side) 35x11.6mm (short side) 30x20.3mm 30x28mm (long side) 30x12mm (short side) 30mmx35mm (long side) 30mmx35mm (short side) Drawing No.: GCL-XXJC-2-RD-6290 GCL-XXJC-2-RD-6260 GCL-XXJC-2-RD-6449 GCL-XXJC-2-RD-6259 30mmx28.5mm (long side) 30mmx11.6mm (short side) Drawing No.: GCL-XXJC-2-RD-5716 GCL-XXJC-2-RD-5717 GCL-XXJC-2-RD-6454 GCL-XXJC-2-RD-5723 GCL-XXJC-2-RD-5868 GCL-XXJC-2-RD-5871 GCL-XXJC-2-RD-5843 GCL-XXJC-2-RD-5844 GCL-XXJC-2-RD-6536 GCL-XXJC-2-RD-6537 30mmx28.5mm (long side) 30mmx10.5mm (short side) Drawing No.: GCL-XXJC-2-RD-5716 GCL-XXJC-2-RD-5723 GCL-XXJC-2-RD-5868 GCL-XXJC-2-RD-6362 GCL-XXJC-2-RD-6017 GCL-XXJC-2-RD-6450 GCL-XXJC-2-RD-6456 GCL-XXJC-2-RD-6457 **30mmx28.5mm (long side)** **30mmx10.9mm (short side)** **Drawing No.:** **GCL-XXJC-2-RD-6772** **GCL-XXJC-2-RD-6773** 35mmx28.5mm (long side) 35mmx11.6mm (short side) Drawing No.: GCL-XXJC-2-RD-5901 GCL-XXJC-2-RD-6332		

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			GCL-XXJC-2-RD-6187 GCL-XXJC-2-RD-6405 GCL-XXJC-2-RD-6010 GCL-XXJC-2-RD-6011 GCL-XXJC-2-RD-5900 **GCL-XXJC-2-RD-6654** **GCL-XXJC-2-RD-6655** **GCL-XXJC-2-RD-6674** **GCL-XXJC-2-RD-6675** **GCL-XXJC-2-RD-6676** **GCL-XXJC-2-RD-6677** Without section A: 30mmx35mm (long frame) 30mmx17.1mm (short frame) 35mmx28.5mm (long side) 35mmx11.6mm (short side) GCL-XXJC-2-RD-5485 GCL-XXJC-2-RD-5486 GCL-XXJC-2-RD-5510 GCL-XXJC-2-RD-5518 GCL-XXJC-2-RD-5563 Short side without section A: 30mmx28.5mm (long side) 26mmx11.6mm (short side) GCL-XXJC-2-RD-6341 GCL-XXJC-2-RD-6026 GCL-XXJC-2-RD-6287 GCL-XXJC-2-RD-6288 GCL-XXJC-2-RD-6190 Only used for GCL-NT12R/66GDFxxx and GCL-NT10/72GDFxxx		
Adhesive 1 (frame)	Shanghai Huitian New Chemical Material Co., Ltd	HT906Z (white or black)	Silicon	—	—
Adhesive 2 (frame)	Zhenjiang Raybond New Material Technology Co., LTD	RS-3300 (white or black)	Silicon	—	—
Adhesive 3 (frame)	Zhenjiang Raybond New Material Technology Co., LTD	RS-3316 (white or black)	Silicon	—	—
Adhesive 4 (frame)	H.B. Fuller(Suzhou) Adhesive Material Co., Ltd.	1527	Silicon	—	—
Adhesive 5 (frame)	Jiangsu Tianchen New Materials Co., Ltd.	HT-8258	Silicon	—	—
Adhesive 6 (frame)	Guangzhou Baiyun Technology Co., Ltd.	SMG533 (white or black)	Silicon	—	—
Adhesive 7 (frame)	Hangzhou Zhijiang Silicone Chemicals CO., LTD	JS -606	Silicon	—	—

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Adhesive 8 (frame)	GOLOHO POLYMER JIANGXI CO., LTD	GOLOHO-3901-HW (white or black)	Silicon	—	—
Adhesive 9 (frame)	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Hangzhou Zhijiang Silicone Chemicals CO., LTD	GCL-Axy (x=0, y=6)	Silicon	—	—
Adhesive 10 (frame)	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Zhenjiang Raybond New Material Technology Co., LTD	GCL-Axy (x=1, y=5) (white or black)	Silicon	—	—
Adhesive 11 (frame)	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Zhenjiang Raybond New Material Technology Co., LTD	GCL-Axy (x=0, y=5) (white or black)	Silicon	—	—
Cell connectors	Suzhou Well Energy New Material Co.,Ltd	Sn60Pb40	Φ=0.30mm	—	—
		Low temperature Sn43Pb43Bi14	Φ=0.30/0.29/0.28/0.27mm	—	—
	Suzhou YourBest New-type Materials Co., Ltd.	Sn60Pb40	Ø=0.30/0.28/0.27/0.26/ 0.25/0.24/0.23/0.22mm ±0.005mm 0.25mmx0.6mm; 0.25mmx0.6mm (Copper-clad Aluminum Ribbon)	—	—
	Wuxi Sveck Technology Co., Ltd	Sn60Pb40	Ø=0.30/0.29/0.28/0.27/ 0.26/0.25/0.24/0.23mm ±0.005mm 0.27x1.0/0.9mm 0.25x1.0/0.9mm	—	—
	Tonyshare (Suzhou) Electronic Materials Technology Co., Ltd.	Sn60Pb40	Ø=0.32mm±0.005mm	—	—
	Suzhou Boneed Photovoltaic Technology Co., Ltd	Sn60Pb40	Ø=0.40/0.35/0.32/0.30/ 0.29/0.28/0.27/0.26/0.25/ 0.24/0.23mm ±0.005mm 0.27x1.0/0.9mm 0.25x1.0/0.9mm 0.23x1.0/0.9mm Ø=0.32/0.17x0.70mm	—	—

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		Sn60Pb40	Ø=0.26/0.25/0.24mm ± 0.005mm (Copper-clad Aluminum Ribbon)	—	—
		Sn50Pb50	Ø=0.26/0.25/ 0.24/0.23/0.22mm±0.005mm	—	—
	Jiangsu Sun Technology Corp., Ltd.	Sn60Pb40	Ø=0.40/0.35/0.32/0.30 ±0.005mm Ø=0.25±0.02mm 0.27x1.0/0.9mm 0.25x1.0/0.9mm 0.12x20mm	—	—
	Xi'an Telison New Materials Co., Ltd	Sn60Pb40	Ø=0.40/0.35/0.33/0.32/ 0.30/0.29/0.28/0.27/0.26/ 0.25/0.24/0.23mm ±0.005mm 0.27x1.0/0.9mm 0.25x1.0/0.9mm	—	—
	Changzhou Greateen New Energy Technology Co., Ltd.	Sn60Pb40	Ø=0.40/0.35/0.32/0.30 ±0.005mm Ø=0.25±0.02mm 0.27x0.9mm 0.25x0.9mm	—	—
	ANHUI TONGCHENG NEW ENERGY MATERIALS CO., LTD.	Sn60Pb40	Ø=0.30/0.29/0.28/0.27/ 0.26/0.25/0.24/0.23/0.22mm±0.005mm	—	—
	Jiangsu Wetown New Material Technology Co., Ltd.	Sn60Pb40	Ø=0.28/0.27/ 0.26/0.255/0.25/0.24/ 0.22mm±0.005mm	—	—
	JA (Wuxi) PV Technology Co., Ltd.	Sn60Pb40	Ø=0.26/0.25/0.24/0.23/0.22mm (-0.005, +0.015)mm	—	—
		Sn50Pb50	Ø=0.26/0.25/0.24/0.23/0.22mm (-0.005, +0.015)mm	—	—
	Hefei GCL System Integration New Energy Technology Co., Ltd. Funing GCL System Integration Technology Co., Ltd. OEM manufacturer: Suzhou Boneed Photovoltaic Technology Co., Ltd Suzhou YourBest New-type Materials Co., Ltd. Wuxi Changliang Photoelectric Technology Co., Ltd. Xi'an Telison New Materials Co., Ltd Wuxi Sveck Technology Co., Ltd	Sn60Pb40	Ø=0.30/0.29/0.28/0.27/ 0.26/0.255/0.25/0.24/0.23/ 0.22mm±0.01mm	—	—
		Sn60Pb40	0.25mmx0.6mm	—	—
		Sn60Pb40	Ø=0.26/0.25/0.24 mm ± 0.005mm (Copper-clad Aluminum Ribbon); 0.25mmx0.6mm	—	—

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	Jiangsu Sun Technology Corp., Ltd. Changzhou Greateen New Energy Technology Co., Ltd. Suzhou Well Energy New Material Co., Ltd. ANHUI TONGCHENG NEW ENERGY MATERIALS CO., LTD. Jiangsu Wetown New Material Technology Co., Ltd. JA (Wuxi) PV Technology Co., Ltd.		(Copper-clad Aluminum Ribbon)		
		Sn50Pb50	Ø=0.26/0.25/0.24/0.23/0.22mm±0.01mm	—	—
String connectors	Suzhou Well Energy New Material Co.,Ltd	Sn60Pb40	L(mm) X T(mm): 0.35mm x 6.0mm 0.30mm x 4.0mm 0.30mm x 6.0mm 0.3mm x 4.0mm(Black) 0.3mm x 6.0mm(Black)	—	—
	Suzhou YourBest New-type Materials Co., Ltd.	Sn60Pb40	L(mm) X T(mm): 0.35mm x 6.0mm 0.25/0.26/0.27/0.28/0.29/0.30/0.40 mm x 4.0mm 0.25/0.26/0.27/0.28/0.29/0.30mm x 6.0mm 0.25/0.26/0.27/0.28/0.29/0.30mm x 5.4mm 0.25/0.26/0.27/0.28/0.29/0.30mm x 5.0mm	—	—
	Wuxi Sveck Technology Co., Ltd	Sn60Pb40	L(mm) X T(mm): 0.30/0.35mm x 6.0mm 0.25/0.30mm x 5.0mm 0.25/0.30/0.40mm x 4.0mm	—	—
	Tonyshare (Suzhou) Electronic Materials Technology Co., Ltd.	Sn60Pb40	L(mm) X T(mm): 4.0 x 0.3 6.0 x 0.3	—	—
	Suzhou Boneed Photovoltaic Technology Co., Ltd	Sn60Pb40	L(mm) X T(mm): 0.35mm x 6.0mm 0.25/0.26/0.27/0.28/0.29/0.30/0.40mm x 4.0mm 0.25/0.26/0.27/0.28/0.29/0.30mmx 6.0mm 0.25/0.26/0.27/0.28/0.29/0.30mm x 5.4mm 0.25/0.26/0.27/0.28/0.29/0.30mm x 5.0mm 0.3mm x 4.0mm(Black) 0.3mm x 6.0mm(Black)	—	—
	Jiangsu Sun Technology Corp., Ltd.	Sn60Pb40	L(mm) X T(mm): 0.35mm x 6.0mm 0.30mm x 4.0mm 0.30mm x 6.0mm	—	—
	Xi'an Telison New Materials Co., Ltd	Sn60Pb40	T(mm) x L(mm): 0.35/0.30/0.25mm x 6.0mm 0.35/0.30/0.25mm x 4.0mm	—	—
	Changzhou Greateen New Energy Technology Co., Ltd.	Sn60Pb40	L(mm) X T(mm): 0.35mm x 6.0mm 0.30mm x 4.0mm 0.30mm x 6.0mm	—	—

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	ANHUI TONGCHENG NEW ENERGY MATERIALS CO., LTD.	Sn60Pb40	0.25/0.30mm x 4.0mm 0.25/0.30mm x 6.0mm	—	—
	Hefei GCL System Integration New Energy Technology Co., Ltd. Funing GCL System Integration Technology Co., Ltd. OEM manufacturer: Suzhou Boneed Photovoltaic Technology Co., Ltd Suzhou YourBest New-type Materials Co., Ltd. Wuxi Changliang Photoelectric Technology Co., Ltd. Xi'an Telison New Materials Co., Ltd Wuxi Sveck Technology Co., Ltd Jiangsu Sun Technology Corp., Ltd. Changzhou Greateen New Energy Technology Co., Ltd. Suzhou Well Energy New Material Co., Ltd. ANHUI TONGCHENG NEW ENERGY MATERIALS CO., LTD.	Sn60Pb40	T(mm) x L(mm): 0.25/0.26/0.27/0.28/0.29/0.30/0.40mm x 4.0mm 0.25/0.26/0.27/0.28/0.29/0.30/0.35mm x 6.0mm 0.25/0.26/0.27/0.28/0.29/0.30mm x 5.4mm 0.25/0.26/0.27/0.28/0.29/0.30mm x 5.0mm 0.30mm x 4.0mm(black) 0.30mm x 6.0mm(black)	—	—
		Sn60Pb40	0.25/0.30mm x 4.0mm 0.25/0.30mm x 6.0mm Copper-clad Aluminum Ribbon	—	—
Reflective string connector 1	Xi'an Telison New Materials Co., Ltd	Sn60Pb40	T(mm) x L(mm): 0.25/0.30/0.35/0.40mmx6.0mm 0.25/0.30/0.35/0.40mmx4.0mm	—	—
		Sn50Pb50	T(mm) x L(mm): 0.30mm x 6.0mm 0.25mm x 4.0mm	—	—
Reflective string connector 2	Wuxi Sveck Technology Co., Ltd	Sn60Pb40	T(mm) x L(mm): 0.25mm x 4.0mm 0.30mm x 4.0mm 0.25mm x 6.0mm 0.30mm x 6.0mm	—	—
Reflective string connector 3	Suzhou Boneed Photovoltaic Technology Co., Ltd.	Sn60Pb40	T(mm) x L(mm): 0.25mm x 4.0mm 0.30mm x 4.0mm 0.25mm x 6.0mm 0.30mm x 6.0mm	—	—
Reflective string connector 4	Suzhou YourBest New-Type Materials Co., Ltd.	Sn60Pb40	T(mm) x L(mm): 0.25mm x 4.0mm 0.30mm x 4.0mm 0.25mm x 6.0mm 0.30mm x 6.0mm	—	—
Reflective string connector 5	ANHUI TONGCHENG NEW ENERGY MATERIALS CO., LTD.	Sn60Pb40	T(mm) x L(mm): 0.25mm x 4.0mm 0.30mm x 6.0mm	—	—
		Sn50Pb50	T(mm) x L(mm): 0.25mm x 4.0mm 0.30mm x 6.0mm	—	—

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Reflective string connector 6	Hefei GCL System Integration New Energy Technology Co., Ltd. Funing GCL System Integration Technology Co., Ltd. OEM manufacturer: Xi'an Telison New Materials Co., Ltd Wuxi Sveck Technology Co., Ltd Suzhou Boneed Photovoltaic Technology Co., Ltd Suzhou YourBest New-Type Materials Co., Ltd. ANHUI TONGCHENG NEW ENERGY MATERIALS CO., LTD. Wuxi Changliang Photoelectric Technology Co., Ltd. Jiangsu Sun Technology Corp., Ltd. Changzhou Greateen New Energy Technology Co., Ltd. Suzhou Well Energy New Material Co., Ltd. Jiangsu Wetown New Material Technology Co., Ltd. **JA (Wuxi) PV Technology Co., Ltd.**	Sn60Pb40	T(mm) x L(mm): 0.25mm x 4.0mm 0.30mm x 4.0mm 0.35mm x 4.0mm 0.40mm x 4.0mm 0.25mm x 6.0mm 0.30mm x 6.0mm 0.35mm x 6.0mm 0.40mm x 6.0mm	—	—
		Sn50Pb50	T(mm) x L(mm): 0.25mm x 4.0mm 0.30mm x 6.0mm **0.40mm x 4.0mm** **0.40mm x 6.0mm**	—	—
Reflective string connector 7	Jiangsu Wetown New Material Technology Co., Ltd.	Sn50Pb50	T(mm) x L(mm): 0.3mm x 6.0mm 0.25mm x 4.0mm	—	—
Reflective string connector 8	**JA (Wuxi) PV Technology Co., Ltd.**	**Sn60Pb40**	**0.40mm x 4.0mm** **0.40mm x 6.0mm**	—	—
		Sn50Pb50	**0.40mm x 4.0mm** **0.40mm x 6.0mm**	—	—
Solder paste 1	Beijing Rtax Technology Co., Ltd.	SnP-AX-183 paste	Sn/Pb/X	—	—
Solder paste 2	Shenzhen Vital New Material Company Limited	GW9098-GF	Sn/Pb/X	—	—
Insulating adhesive 1 (use with Encapsulation material 37)	Shenzhen Rongda Photosensitive Science & Technology Incorporated Company	THW-5DN200	Thickness=30±10um	—	—
Insulating adhesive 2 (use with Encapsulation material 37)	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Shenzhen Rongda Photosensitive Science & Technology Incorporated Company	GCL-TIG-001a	Thickness=30±10um	—	—
Insulating adhesive 3 (use with Encapsulation material 46,49)	Jiangsu Kuangshun Photosensitivity New Material Stock Co., LTD.	KSM-3931 CL2/KSM-80 HD8	Thickness=30±10um	—	—
Fluxing agent	Shenzhen Vital New Material Company Limited	WTO-PV105A	—	—	—
	ASAHI SOLDER TECHNOLOGY(WUXI)CO., LTD	SF 56	—	—	—

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	Shenzhen Tongfang Electronic New Material Co., Ltd	AATF9800	—	—	—
	Suzhou Costar Electronic Material Co., Ltd.	FD-309	—	—	—
	Zhuhai Changxian New Material Technology Co., Ltd.	CX700	—	—	—
Fixing tape 1	Suzhou Tianqisong Photovoltaic Technology Co., Ltd	TEC006	Thickness=0.060mm± 0.05mm	—	—
Fixing tape 2	Luqin new materials technology (Jiangsu) Co., Ltd.	LK-H21353	Thickness=0.060mm± 0.05mm	—	—
Fixing tape 3	3M	UV-1	Thickness=0.062mm± 0.05mm	—	—
Fixing tape 4	3M	UV-100	Clear PET	—	—
Fixing tape 5	Wuxi Ruidu New Material Co.,Ltd	RD-SV65	Thickness=0.06mm± 0.05mm	—	—
Fixing tape 6	Suzhou Rongzhi Electronic Technology Co., Ltd.	D60F6-4	Thickness=0.065mm± 0.05mm	—	—
Fixing tape 7	**Guangdong Xinrunjia New Material Co., Ltd.**	**TA3630**	**Thickness=0.065mm±0.005mm**	—	—
Accessories1 (Light redirecting film)	Heyu Technology Co., Ltd.	BC81	Thickness=0.135mm±0.02 mm Thickness=0.115mm±0.02 mm Various width available	—	—
		WM800	Thickness=0.170mm±0.07 0mm Various width available	—	—
Accessories 2 (Light redirecting film)	Wuxi Ruidu New Materials Co., Ltd.	YKC-125	Thickness=0.125mm± 0.02mm Various width available	—	—
Accessories 3 (Light redirecting film)	Suzhou Jumbo Technology Co., Ltd.	JX02	Thickness=0.13mm± 0.02mm Various width available	—	—
Accessories 4 (Light redirecting film)	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Suzhou Deyuan New Material Technology Co., Ltd. Heyu Technology Co., Ltd. Ningbo Exciton New Energy Co., Ltd. **Nantong Jingtian New Energy Technology Co., Ltd.**	GCL-X-y: GCL-Alxy (x=0,1; y=1,2,3,4); GCL-Why (y=1,2,3,4)	Thickness=0.105±0.015m m Thickness=0.115mm±0.020mm Thickness=0.125mm±0.025mm Thickness=0.130mm±0.015mm Thickness=0.170mm±0.070mm **Thickness=0.190mm±0.015mm** Various width available	—	—

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Accessories 5 (Light redirecting film)	Ningbo Exciton New Energy Co., Ltd.	ET70RX-7	Thickness=0.125mm±0.025mm Various width available	—	—
		ET70RW	**Thickness=0.190mm±0.015mm Various width available**	—	—
Accessories 6 (Light redirecting film)	Suzhou Deyuan New Material Technology Co., Ltd.	105J03	Thickness=0.105mm±0.015mm Various width available	—	—
		DY115W	Thickness=0.105mm±0.015mm Various width available	—	—
		DYJX-01	Thickness=0.125mm±0.015mm Various width available	—	—
Accessories 7 (Light redirecting film)	**Nantong Jingtian New Energy Technology Co., Ltd.**	**JT662M**	**Thickness=0.105mm±0.015mm Various width available**	—	—
		JT671WM	**Thickness=0.190mm±0.015mm Various width available**	—	—
Insulation tape 1	Cybrid Technologies Inc.	Cynagard 115F	Thickness =0.25mm± 0.05mm Color: black	—	—
Insulation tape 2	Hangzhou First Applied Material Co., Ltd.	BEC-201B	Thickness =0.265mm± 0.05mm Color: black	—	—

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Object	Manufacturer / trademark	Type / model	Technical data / ratings	Standard (if applicable)	Certificates (if applicable)
Junction Box Combination 1					
Junction box	Suzhou Bright Photovoltaic Electronic Technology Co., Ltd.	BET1901-abc (a=1 or 2)	Rated voltage =1500VDC Rated current =20A for BET1901-abc (a=1), BET2101-abc (a=3), BET2301-abc (a=4); 25A for BET1901-abc (a=2), BET2101-abc (a=1), BET2301-abc (a=1), BET2102-abc (a=1); 26A for BET2301-abc (a=3); 30A for BET2101-abc (a=2), BET2301-abc (a=2); 35A for BET2102-abc (a=2); Reverse current=40.5A Max. working (module) voltage=135V for BET1901-abc, BET2101-abc, BET2301-abc; 90V for BET2102-abc Reverse current=40.5A	IEC 62790: 2020 EN 62790: 2020	R 50513413
		BET2101-abc (a=1 or 2 or 3)			
		BET2102-abc (a=1 or 2)			
		BET2301-abc (a=1 or 2 or 3 or 4)			
Cable	Shanghai Jinyou Jinhong Intelligent Electric Co., Ltd.	62930 IEC 131 1x1,5…240mm²	1 x 4,0 mm2 1 x 6,0 mm2	EN 50618: 2014	TÜV R 50482064
	SUZHOU YONGHAO CABLE CO., LTD.	62930 IEC 131 1x2,5…35mm²	1 x 4,0 mm2	EN 50618: 2014	TÜV R 50401233
	Ningbo Kibor Wire&Cable Co., Ltd.	62930 IEC 131 1x1,5…240mm²	1 x 4,0 mm2	IEC 62930: 2017	TÜV R 50413678
	Wuxi Xinhongye Wire & Cable Co., Ltd	62930 IEC 131 1x2,5…35 mm2 HALOGEN FREE LOW SMOKE	1 x 4,0 mm2	IEC 62930: 2017	TÜV R 50439595
	Suzhou Xtong Photovoltaic Technologies Co., Ltd	62930 IEC 131 1x2,5…35 mm² HALOGEN FREE LOW SMOKE	1 x 4,0 mm²	IEC 62930: 2017	TÜV R 50453577
Connector	Suzhou Bright Photovoltaic Electronic Technology Co., Ltd.	B01	System voltage: 1500V; rated current: 30A	IEC 62852: 2014	TÜV R 50483303
		B05x (x=1)			
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	System voltage: 1500V; rated current: 45A	IEC 62852: 2014	TÜV R 60127169
Bypass diode	1. Yangzhou Yangjie Electronic Technology Co., Ltd./ 2. Panjit Electronics(Wuxi)CO., LTD./ 3. YangZhou Maojia Electronics Co.,Ltd./ 4. NANTONG GAOXIN ELECTRONICS CO., LTD. 5. Suzhou Bright Photovoltaic Technology Co., Ltd (OEM by above manufacturer 1 to 4)	MK3045	Tjmax =200 ℃ rated current=20A for BET1901-abc (a=1),	—	—
		MK6045	Tj max =200 ℃; rated current=25A for BET1901-abc (a=2),	—	—

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	1. Yangzhou Yangjie Electronic Technology Co., Ltd./ 2. YangZhou Maojia Electronics Co.,Ltd./ 3. NANTONG GAOXIN ELECTRONICS CO., LTD. 4. Suzhou Bright Photovoltaic Technology Co., Ltd (OEM by above manufacturer 1 to 3)	MK6545	Tj max =200 ℃; rated current=30A for BET1901-abc (a=3),	—	—
	Panjit Electronics (Wuxi) CO., LTD.	GF3545	Tj max =200 ℃; rated current=25A for BET1901-abc (a=2)	—	—
	Yangzhou Yangjie Electronic Technology Co., Ltd. 2. AnHui Juxin Semiconductor Technology Co., Ltd. 3. Panjit Electronics (Wuxi) CO., LTD. 4. NANTONG GAOXIN ELECTRONICS CO,LTD 5. Suzhou Bright Photovoltaic Electronic Technology Co., Ltd. (OEM by above manufacturer 1 to 4)	MK3045	Tjmax =200 ℃ rated current=25A for BET2101-abc (a=1)	—	—
		MK6045	Tj max =200 ℃; rated current=30A for BET2101-abc (a=2)	—	—
	1.Yangzhou Maojia Electronics Co., Ltd. 2.Yangzhou Yangjie Electronic Technology Co., Ltd. 3.Suzhou Bright Photovoltaic Technology Co., Ltd (OEM by above manufacturer 1 to 2)	35SQ045	Tjmax =200 ℃ rated current=25A for BET2301-abc (a=1),	—	—
		40SQ045	Tj max =200 ℃; rated current=30A for BET2301-abc (a=2)	—	—
		35SQ045P	Tj max =200 ℃; rated current=25A for BET2301-abc (a=1)	—	—
		30SQ045	Tj max =200 ℃; rated current=20A for BET2301-abc (a=4);	—	—
		MK5045	Tjmax =200 ℃ rated current=25A for BET2101-abc (a=1)	—	—
		MK2545	Tj max =200 ℃; rated current=20A for BET2101-abc (a=3)	—	—
	SOUTHWEST INTEGRATED CIRCUIT DESIGN CO., LTD	XND38-V30C	Tj max =200 ℃; rated current=25A for BET2102-abc (a=1)	—	—
		XND38-V30S	Tj max =200 ℃; rated current=35A for BET2102-abc (a=2)	—	—
Adhesive 1	Guangzhou Baiyun Technology Co., Ltd.	SMG533 (white or black)	Silicon	—	—
Adhesive 2	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	Silicon	—	—

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Adhesive 3	Shanghai Huitian New Material Co., Ltd.	HT906Z (white or black)	Silicon	—	—
Adhesive 4	H.B. Fuller(Suzhou) Adhesive Material Co., Ltd.	1527	Silicon	—	—
Adhesive 5	Jiangsu Tianchen New Materials Co., Ltd.	HT-8258	Silicon	—	—
Adhesive 6	Zhenjiang Raybond New Material Technology Co., LTD	RS-3316 (white or black)	Silicon	—	—
Adhesive 7	Zhenjiang Raybond New Material Technology Co., LTD	RS-3300 (white or black)	Silicon	—	—
Adhesive 8	Yangzhou Shenzhou New Materials Co., Ltd.	S-118	Silicon	—	—
Potting 1 (junction box)	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184 (white)	Silicon	—	—
Potting 2 (junction box)	Guangzhou Baiyun Technology Co., Ltd.	SKF323 (white or black)	Silicon	—	—
Potting 3 (junction box)	H.B. Fuller(Suzhou) Adhesive Material Co., Ltd.	1521(white)	Silicon	—	—
Potting 4 (junction box)	Shanghai Huitian New Chemical Material Co., Ltd	5299W-S	Silicon	—	—
Potting 5 (junction box)	Jiangsu Tianchen New Materials Co., Ltd.	HT-6360A/ HT-6360B	Silicon	—	—
Potting 6 (junction box)	H.B. Fuller(Suzhou) Adhesive Material Co., Ltd.	1521 or 1533(white)	Silicon	—	—
Potting 7 (junction box)	Yangzhou Shenzhou New Materials Co., Ltd.	S-121	Silicon	—	—
Potting 8 (junction box)	Jiangsu Minghao New Material Technology Co., Ltd.	MH-3667	Silicon	—	—
Junction Box Combination 2					
Junction box	Suzhou Xtong Photovoltaic Technology Co., Ltd	PV-XT1609Nxyz (x=4; y=2 or 3 or 4; z=1 or 2) PV-XT1609Nxyz (x=5 or 4; y=5; z= 2) PV-XT1609Nxyz	Rated voltage=1500VDC 20A for PV-XT1609Nxyz (x=4; y=2; z=1 or 2) 25A for PV-XT1609Nxyz (x=4; y=3; z=1 or 2) 30A for PV-XT1609Nxyz (x=4; y=4; z=1 or 2) 35A for PV-XT1609Nxyz (x=5; y=5; z=2) 35A for PV-XT1609Nxyz (x=4; y=5; z=2) Reverse current= 40A	IEC 62790: 2020; EN IEC 62790: 2020	R 50524457
Cable	Suzhou Xtong Photovoltaic Technologies Co., Ltd.	62930 IEC 131 XTONG 1X1,5…35mm2 HALOGEN FREE LOW SMOKE	Max. Voltage = 1500VDC Max. Current = N/A 1 x 4,0mm2	IEC 62930:2017	R 50453577
	Wuxi Xinhongye Wire & Cable Co., Ltd.	62930 IEC 131 XTONG 1X1,5…35mm2 HALOGEN FREE LOW SMOKE	Max. Voltage = 1500VDC Max. Current = N/A 1 x 4,0mm2	IEC 62930:2017	R 50439595
	Trina Solar Co., Ltd.	62930 IEC 131 XTONG 1X4.0mm² HALOGEN FREE LOW SMOKE	Max. Voltage = 1500VDC Max. Current = N/A 1 x 4,0mm²	IEC 62930:2017	R 50451199

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Connector	Suzhou Xtonaog Photovoltaic Technology Co., Ltd	PV-XT101.1; PV-XT101.1x; PV-XT101.2	Max. Voltage = 1500VDC Max. Current = 41A for 4,0mm²	IEC 62852: 2014+A1 EN 62852: 2015+A1	R 50568733
		XT2	Max. Voltage = 1500VDC Max. Current = 45A for 4,0mm²	IEC 62852: 2014+A1 EN 62852: 2015+A1	R 50568733
	Stäubli Electrical Connectors	PV-KST4-EVO 2/xy_UR (male); PV-KBT4-EVO 2/xy_UR (female)	Max. Voltage = 1500VDC Max. Current = 45A	IEC 62852: 2014	R 60127169
	Trina Solar Co., Ltd.	TS4; TS4-36; TS4-cd (c=1; d=1 or 2)	Max. Voltage = 1500VDC Max. Current = 41A for TS4 and TS4-12 46A for TS4-36 and TS4-11 1 x 4,0mm²	IEC 62930:2017	R 50508240
Bypass diode	Suzhou Xtong Photovoltaic Technology Co., Ltd	XT3050M	For PV-XT1609Nxyz (x=4; y=2; z=1) Tjmax =200 °C	—	—
		XT3050M-B	For PV-XT1609Nxyz (x=4; y=2; z=2) Tjmax =200 °C	—	—
		XT4050M-A	For PV-XT1609Nxyz (x=4; y=3; z=1) Tjmax =200 °C	—	—
		XT4050M-B	For PV-XT1609Nxyz (x=4; y=3; z=2) Tjmax =200 °C	—	—
		XT4550M-A	For PV-XT1609Nxyz (x=4; y=4; z=1) Tjmax =200 °C	—	—
		XT4550M-B	For PV-XT1609Nxyz (x=4; y=4; z=2) Tjmax =200 °C	—	—
		XT5050M-B	For PV-XT1609Nxyz (x=5; y=5; z=2) Tjmax =200 °C	—	—
Adhesive 1	H.B. Fuller(Suzhou) Adhesive Material Co., Ltd.	1527	Silicon	—	—
Adhesive 2	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z (white or black)	Silicon	—	—
Adhesive 3	Guangzhou Baiyun Technology Co., Ltd.	SMG533 (white or black)	Silicon	—	—
Adhesive 4	Hangzhou Zhijiang Silicone Chemical Co., Ltd.	JS-606	Silicon	—	—
Adhesive 5	LIYANG KANGDAWEI INDUSTRY CO., LTD.	KDW-1536	Silicon	—	—
Adhesive 6	Jiangsu Tianchen New Materials Co., Ltd.	HT-8258	Silicon	—	—

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Potting 1 (junction box)	H.B. Fuller (Suzhou) Adhesive Material Ltd.	1521 and 1533	Silicon	—	—
Potting 2 (junction box)	Shanghai Huitian New MaterialCo., Ltd.	5299W-S	Silicon	—	—
Potting 3 (junction box)	Guangzhou Baiyun Technology Co., Ltd.	SKF323 (white or black)	Silicon	—	—
Potting 4 (junction box)	LIYANG KANGDAWEI INDUSTRY CO., LTD.	KDW-3582	Silicon	—	—
Potting 5 (junction box)	Jiangsu Tianchen New Materials Co., Ltd.	HT-6360A/HT-6360B	Silicon	—	—
Junction Box Combination 3					
Junction box	Jiangsu Haitian Microelectronics Corp.	PV-HT021x (x=2, 3, 4 or 5)	Rated voltage=1500V 20A for PV-HT021x (x=2); 25A for PV-HT021x (x=3); 30A for PV-HT021x (x=4); 35A for PV-HT021x (x=5)	IEC 62790: 2020; EN IEC 62790: 2020	R 50529249
Cable	Jiangsu Haitian Microelectronics Corp.	62930 IEC 131 1x4mm² HALOGEN FREE LOW SMOKE	1 x 4,0 mm²	IEC 62930:2017	TÜV R 50450875
Connector	Jiangsu Haitian Microelectronics Corp.	PV-HT03x (x=0 or 1)	Rated voltage: 1500V; Rated current: 45A	EN 62852:2015+A1 IEC 62852:2014+A1	TÜV R 50340356
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR (male); PV-KBT4-EVO 2/xy_UR (female)	Rated voltage: 1500V; Rated current: 45A	IEC 62852:2014+A1	TÜV R 60127169
		PV-KST4-EVO2A/xy; PV-KBT4-EVO2A/xy			
	Zerun Co., LTD.	Z4S-abcd	Rated voltage: 1500V; Rated current: 41A	IEC 62852:2014+A1	TÜV R 50556260
	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	RHC2xyzu	Rated voltage: 1500V; Rated current: 35A	IEC 62852:2014+A1	TÜV R 50473621
Bypass diode	Jiangsu Haitian Microelectronics Corp./ OEM: Hangzhou Daoming Microelectronics Co., Ltd.	MK3045	For PV-HT021x (x=2) Tjmax =200 ℃	—	—
		MK4045	For PV-HT021x (x=3) Tjmax =200 ℃	—	—
		MK5045	For PV-HT021x (x=4) Tjmax =200 ℃	—	—
		MK6045	For PV-HT021x (x=5) Tjmax =200 ℃	—	—
	Jiangsu Haitian Microelectronics Corp./	30SQ045	For PV-HT021x (x=2) Tjmax =200 ℃	—	—

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	OEM: NANTONG GAOXIN SCIENCE AND TECHNOLOGY DEVELOPMENT CO., LTD	35SQ045	For PV-HT021x (x=3) Tjmax =200 ℃	—	—
		40SQ045	For PV-HT021x (x=4) Tjmax =200 ℃	—	—
		45SQ045	For PV-HT021x (x=5) Tjmax =200 ℃	—	—
Adhesive 1	Suzhou TONSAN Adhesive Ltd./ H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1527	Silicon	—	—
Adhesive 2	Shanghai Huitian New Chemical Material Co., Ltd	HT906Z (white or black)	Silicon	—	—
Adhesive 3	Guangzhou Baiyun Technology Co., Ltd.	SMG533 (white or black)	Silicon	—	—
Adhesive 3	Dow Corning (Shanghai) Management Co., Ltd.	PV-804	Silicon	—	—
Adhesive 4	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	Silicon	—	—
Adhesive 5	CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD.	888A	Silicon	—	—
Potting 1 (junction box)	Shanghai Huitian New Chemical Material Co., Ltd.	5299W-S	Silicon	—	—
Potting 2 (junction box)	Suzhou TONSAN Adhesive Ltd./ H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1521	Silicon	—	—
Potting 3 (junction box)	Guangzhou Baiyun Technology Co., Ltd.	SKF323 (white or black)	Silicon	—	—
Potting 4 (junction box)	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	Silicon	—	—
Potting 5 (junction box)	Jiangsu tomorrow rubber industry Co., Ltd.	ZQ-5622W	Silicon	—	—
Potting 6 (junction box)	LIYANG KANGDAWEI INDUSTRY CO., LTD.	KDW-3582	Silicon	—	—
Potting 7 (junction box)	CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD.	4808	Silicon	—	—
Junction Box Combination 4					
Junction box	Zerun Co., Ltd	Z8-abcd(a=C, b=B,D,E, or F, C=W, D, P, K, N or Q, d=K or O)	Rated voltage=1500VDC 20A for Z8-abcd (c=W) 22A for Z8-abcd (b=E or F, c=D) 25A for Z8-abcd (c=P) 27A for Z8-abcd (b=E or F, c=K) 30A for Z8-abcd (c=N) 32A for Z8-abcd (b=E or F, c=Q)	IEC 62790: 2020; EN IEC 62790: 2020	R 50537484
Cable	Wuxi Xinhongye Wire&Cable Co., Ltd	62930 IEC 131 1x1,5…35mm²	1 x 4,0 mm²	IEC 62930:2017	TÜV R 50439595
	Zerun Co., Ltd	62930 IEC 131 1x2,5…6,0mm²	1 x 4,0 mm²	IEC 62930:2017	TÜV R 50354353

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	Suzhou BAOHING Electric Wire&Cable Co., LTD	62930 IEC 131 1x1,5…35mm²	1 x 4,0 mm²	IEC 62930:2017	TÜV R 50464210
	Changshu JHOSIN Communication Technology Co., LTD	62930 IEC 131 1x1,5…35mm²	1 x 4,0 mm²	IEC 62930:2017	TÜV R 50413335
	Trina Solar Co., Ltd.	62930 IEC 131 1x4.0mm²	1 x 4,0 mm²	IEC 62930:2017	TÜV R 50451199
	RR Kabel Ltd.	62930 IEC 131 1x1,5…16mm²	1 x 4,0 mm²	IEC 62930:2017	TÜV R 60176782
	VINDHYA TELELINKS LTD.	62930 IEC 131 1x1,5…240mm²	1 x 4,0 mm²	IEC 62930:2017	TÜV R 50500939
Connector	Zerun Co., Ltd.	Z4S-abcde	Rated voltage: 1500V; Rated current: 40A for 4.0 mm2	EN 62852:2015 IEC 62852:2014	TÜV R 50495771
		Z4S-abcd	Rated voltage: 1500V; Rated current: 41A for 4.0 mm2	EN 62852:2015+A1 IEC 62852:2014+A1	TÜV R 50556260
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR (male); PV-KBT4-EVO 2/xy_UR (female) PV-KST4-EVO 2A/xy (male); PV-KBT4-EVO 2A/xy(female)	Rated voltage: 1500V; Rated current: 45A for 4.0 mm2 53A for 6.0 mm2	IEC 62852:2014+A1	TÜV R 60127169
	Amphenol Technology (Shenzhen) Co., Ltd.	UTXCFabce, UTXCMabcd	System voltage: 1500VDC, rated current: 42A for 4,0mm²	EN 62852:2015 IEC 62852:2014	TÜV R 50340393
	Changzhou EGing Photovoltaic Technology Co., Ltd.	E1-X-abcd	System voltage: 1500VDC, rated current: 41A for 4,0mm²	EN 62852:2015 IEC 62852:2014	TÜV R 50567143
	Tyco Electronics Austria GmbH	PV4-S a b cc	System voltage: 1500VDC, rated current: 32A for 4,0mm²	EN 62852:2015 IEC 62852:2014	TÜV R 60166589
	Trina Solar Co., Ltd.	TS4-12	System voltage: 1500VDC, rated current: 41A	EN 62852:2015 IEC 62852:2014	TÜV R 50385924
	Jiangsu Runergy New Energy Technology Co., Ltd.	RY01	System voltage: 1500VDC, rated current: 41A	EN 62852:2015 IEC 62852:2014	TÜV R 50575424
	Hanwha Q CELLS (Qidong) Co., Ltd.	HQC4	System voltage: 1500VDC, rated current: 41A	EN 62852:2015 IEC 62852:2014	TÜV R 50517205
Bypass diode1	Zerun Co., Ltd. OEM manufacture: 1.NANTONG GAOXIN ELECTRONICS CO., LTD 2.Hangzhou Daoming Microelectronics Co., Ltd.	30SQ045	For Z8-abcd (c=W) Z8-abcd (b=E or F or G, c=D) Tjmax =200 ℃	—	—

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Bypass diode2	Zerun Co., Ltd. OEM manufacture: 1.NANTONG GAOXIN ELECTRONICS CO., LTD 2. Hangzhou Daoming Microelectronics Co., Ltd. 3.Sangdest Microelectronics Co., Ltd. 4.Anhui Juxin Semiconductor Technology Co., Ltd. 5.Yangzhou Yangjie Electronic Technology Co., Ltd. 6.China Resources Microelectronics (Chongqing) 7.Yangzhou HY Technology Development Co., Ltd.(Only for insulation material of 540Z)	35SQ045	For Z8-abcd (c=P) Z8-abcd (b=E or F or G, c=K) Tjmax =200 ℃	—	—
Bypass diode3	Zerun Co., Ltd. OEM manufacture: 1.NANTONG GAOXIN ELECTRONICS CO., LTD 2. Hangzhou Daoming Microelectronics Co., Ltd. 3.Anhui Juxin Semiconductor Technology Co., Ltd.	40SQ045 40SQ045B (Only for c=N)	For Z8-abcd (c=N) Z8-abcd (b=E or F, c=Q) Tjmax =200 ℃	—	—
Bypass diode4	Zerun Co., Ltd. OEM manufacture: 1.Anhui Juxin Semiconductor Technology Co., Ltd.	30SQ045B	For Z8-abcd (c=W, D or P) Z8-abcd (b=E or F or G, c=K) Tjmax =200 ℃	—	—
Bypass diode5	Zerun Co., Ltd. OEM manufacture: 1.NANTONG GAOXIN ELECTRONICS CO., LTD 2. Hangzhou Daoming Microelectronics Co., Ltd.	40SQ045B	For Z8-abcd (b=B, D, E or F, C=P or K) Tjmax =200 ℃	—	—
Bypass diode6	Zerun Co., Ltd. OEM manufacture: 1. Yangzhou Yangjie Electronic Technology Co., Ltd.	35SQ045	For Z8-abcd (b=L, C=P) Tjmax =200 ℃	—	—
Bypass diode7	Zerun Co., Ltd. OEM manufacture: 1. Yangzhou Yangjie Electronic Technology Co., Ltd.	40SQ045	For Z8-abcd (b=L, C=N) Tjmax =200 ℃	—	—
Bypass diode8	Zerun Co., Ltd. OEM manufacture: 1.Anhui Juxin Semiconductor Technology Co., Ltd. 2.Yangzhou Yangjie Electronic Technology Co., Ltd. 3.Yangzhou HY Technology Development Co., Ltd	30SQ045C	For Z8-abcd (b=E or F, c=W, D or P) Tjmax =200 ℃	—	—

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Bypass diode9	Zerun Co., Ltd. OEM manufacture: 1.Yangzhou Yangjie Electronic Technology Co., Ltd. 2.Yangzhou HY Technology Development Co., Ltd	35SQ045C	For Z8-abcd (b=B or D, c=W, D or P) Tjmax =200 ℃	—	—
Adhesive 1	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1527	Silicon	—	—
Adhesive 2	Shanghai Huitian New Chemical Material Co., Ltd	HT906Z (white or black)	Silicon	—	—
Adhesive 3	Shanghai Huitian New Chemical Material Co., Ltd	HT9661	Silicon	—	—
Adhesive 4	Jiangsu Minghao New Material Technology Co., Ltd	MH-3668	Silicon	—	—
Adhesive 5	Guangzhou Baiyun Technology Co., Ltd.	SMG533 (white or black)	Silicon	—	—
Adhesive 6	Hangzhou Zhijiang Silicone Chemical Co., Ltd.	JS-606	Silicon	—	—
Adhesive 7	Chengdu Guibao Science and Technology Co., Ltd	888A	Silicon	—	—
Adhesive 8	Jiangsu Tianchen New Materials Co., Ltd.	HT8258	Silicon	—	—
Potting 1 (junction box)	Shanghai Huitian New Chemical Material Co., Ltd.	5299W-S (white) 5299W (white)	Silicon	—	—
Potting 2 (junction box)	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1521 or 1533(white)	Silicon	—	—
Potting 3 (junction box)	Guangzhou Baiyun Technology Co., Ltd.	SKF323 (white or black)	Silicon	—	—
Potting 4 (junction box)	Jiangsu Minghao New Material Technology Co., Ltd	MH-3667	Silicon	—	—
Potting 5 (junction box)	Hangzhou Zhijiang Silicone	JS-1184(white)	Silicon	—	—
Potting 6 (junction box)	Jiangsu Tianchen New Materials Co., Ltd.	HT-6360A/HT-6360B	Silicon	—	—
Potting 7 (junction box)	Chengdu Guibao Science and Technology Co., Ltd	4808	Silicon	—	—

Junction Box Combination 5					
Junction box	Funing GCL System Integration Technology Co., Ltd. OEM manufactures: 1.Suzhou Xtong Photovoltaic Technologies Co., Ltd. 2.Suzhou Bright Photovoltaic Electronic Technology Co., Ltd. 3.Jiangsu Haitian Microelectronics Corp. 4.Changshu Friends Connector	GCL-N1xyz	Rated voltage =1500VDC Rated current =20A or 25A or 27A or 30 A Reverse current=48A GCL-N1xyz, where GCL-N1 is the main model of the box body, xyz is	IEC 62790: 2020 EN IEC 62790: 2020	TÜV SÜD B 105673 0002 Rev.00

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	Technology Co., Ltd.
	5.Zerun Co., Ltd.
	6.QC Solar (Suzhou) Corporation.
	7. Zhejiang Forsol Energy Co., Ltd.
			reserved as the model respectively, and the comparison relationship is as follows.
			1)"x" indicates the box size:
			x=4, indicating the junction box body size, positive and negative box body corresponding length *width * height =64,5mm x23,5mmx13,5mm.in the middle Box length (including handle length) * width * height =55,5mm(68,5mm) x23,5mm x13,5mm;
			2)"y" indicates the rated current of the junction box:
			y=1, rated current =20A;
			y=2, rated current=25A;
			y=3, rated current =27A;
			y=4, rated current=30A;
			3) "z" model is reserved for upgrade, standby option		

Cable	Wuxi Xinhongye Wire & Cabel Co., Ltd.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV SÜD B 101175 0001 Rev.00
	Suzhou Xtong Photovoltaic Technologies Co., Ltd.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV R 50453577
	Suzhou Bright Photovoltaic Electronic Technology Co., Ltd.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV SÜD B 081180 0005 Rev.00
	Jiangsu Haitian Microelectronics Corp.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV R50450875
	Hefei GCL System Integration New Energy Technology Co., Ltd.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV SÜD B 115225 0003 Rev.00
Connector	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR; PV-KST4-EVO2A/xy; PV-KBT4-EVO2A/xy	System voltage:1500V; rated current: 45A for 4,0mm² 53A for 6,0mm²	IEC 62852: 2014	TÜV R 60127169

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	Hefei GCL System Integration New Energy Technology Co., Ltd.	GCL-01; GCL-02	System voltage:1500V; rated current: 30A for GCL-01(with 1x2,5mm²); 39A for GCL-02(with 1x2.5mm²) 41A for GCL-01(with 1x4.0mm²) 45A for GCL-02(with 1x4,0mm²); 46A for GCL-01(with 1x6,0mm²); 53A for GCL-02(with 1x6.0mm²)	IEC 62852: 2014	TÜV SÜD B 115225 0001 Rev.00
	Funing GCL System Integration Technology Co., Ltd.	GCL-01; GCL-02	System voltage:1500V; rated current: 30A for GCL-01(with 1x2,5mm²); 39A for GCL-02(with 1x2.5mm²) 41A for GCL-01(with 1x4.0mm²) 45A for GCL-02(with 1x4,0mm²); 46A for GCL-01(with 1x6,0mm²); 53A for GCL-02(with 1x6.0mm²)	IEC 62852: 2014	TÜV SÜD B 105673 0001 Rev.00
Bypass diode	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Suzhou Xtong Photovoltaic Technologies Co., Ltd. SUZHOU GOOD-ARK ELECTRONIC CO., LTD. NanTong GaoXin Science And Technology Development Co., Ltd. Jiangsu Changjing Electronics Technology Co., Ltd.	GCL3045	For GCL-N1xyz(y=1) Rated current: 20A IF(AV) =30A, VRRM=50V, Tj=200℃, 100mil, Trench, Single	—	—
		GCL4045	For GCL-N1xyz(y=2) Rated current: 25A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Single	—	—
		GCL4045-B	For GCL-N1xyz(y=3) Rated current: 27A IF(AV) =40A, VRRM=50V, Tj=200℃, 150mil, Trench, Single	—	—
		GCL4045-B	For GCL-N1xyz(y=3) Rated current: 27A IF(AV) =40A, VRRM=50V, Tj=200℃, 165mil, Trench, Single	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 165mil, Trench, Single	—	—

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		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Double	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 180mil, Trench, Single	—	—
	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: YINYU Microelectronics (Zhejiang) Co., Ltd.	GCL3045	For GCL-N1xyz(y=1) Rated current: 20A IF(AV) =30A, VRRM=50V, Tj=200℃, 100mil, Trench, Single	—	—
		GCL4045	For GCL-N1xyz(y=2) Rated current: 25A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Single	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 165mil, Trench, Single	—	—
	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Suzhou Bright Photovoltaic Electronic Technology Co., Ltd.	GCL4045	For GCL-N1xyz(y=2) Rated current: 25A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Single	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 165mil, Trench, Single	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 180mil, Trench, Single	—	—
	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Yangzhou Yangjie Electronic Technology Co., LTD.	GCL4045	For GCL-N1xyz(y=2) Rated current: 25A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Single	—	—

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		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Double	—	—
Adhesive 1	Guangzhou Baiyun Technology Co., Ltd.	SMG533 (white or black)	Silicon	—	—
Adhesive 2	Shanghai Huitian New Material Co., Ltd	HT906Z	Silicon	—	—
Adhesive 3	GOLOHO POLYMER JIANGXI CO., LTD	GOLOHO-3901-HW (white or black)	Silicon	—	—
Adhesive 4	Jiangsu Tianchen New Materials Co., Ltd.	HT-8258 (white or black)	Silicon	—	—
Adhesive 5	Zhenjiang Raybond New Material TechnologyCo., LTD	RS-3300 (white or black)	Silicon	—	—
Adhesive 6	Hangzhou Zhiliang Silicone Co., ltd.	JS-606	Silicon	—	—
Adhesive 7	Zhenjiang Raybond New Material Technology Co., LTD	RS-3316 (white or black)	Silicon	—	—
Adhesive 8	Shanghai Huitian New Material Co., Ltd	4061	Silicon	—	—
Adhesive 9	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Zhenjiang Raybond New Material TechnologyCo., LTD	GCL-Axy (x=0, y=5) (white or black)	Silicon	—	—
Adhesive 10	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Hangzhou Zhiliang Silicone Co., ltd.	GCL-Axy (x=0, y=6)	Silicon	—	—
Adhesive 11	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Zhenjiang Raybond New Material TechnologyCo., LTD	GCL-Axy (x=1, y=5) (white or black)	Silicon	—	—
Adhesive 12	Guangzhou Baiyun Technology Co., Ltd.	SS622E	Silicon	—	—
Potting 1 (junction box)	Guangzhou Baiyun Technology Co., Ltd.	SKF323 (white or black)	Silicon	—	—
Potting 2 (junction box)	Shanghai Huitian New Material Co., Ltd	5299W-S	Silicon	—	—
Potting 3 (junction box)	GOLOHO POLYMER JIANGXI CO., LTD	GOLOHO-313-A/GOLOHO-313-B	Silicon	—	—
Potting 4 (junction box)	Jiangsu Tianchen New Materials Co., Ltd.	HT-6360A/B	Silicon	—	—
Potting 5 (junction box)	Zhenjiang Raybond New Material TechnologyCo., LTD	RS-3200 (white or black)	Silicon	—	—
Potting 6 (junction box)	Hangzhou Zhiliang Silicone Co., ltd.	JS-1184	Silicon	—	—
Potting 7 (junction box)	H.B.Fulle(Suzhou) Advanced Material Co., Ltd.	1521	Silicon	—	—

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Potting 8 (junction box)	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Zhenjiang Raybond New Material TechnologyCo., LTD	GCL-Py (y=5) (white or black)	Silicon	—	—
Potting 9 (junction box)	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Hangzhou Zhijiang Silicone Co., ltd.	GCL-Py (y=6)	Silicon	—	—
Junction Box Combination 6					

Junction box	Hefei GCL System Integration New Energy Technology Co., Ltd.
	OEM manufactures:
	1.Suzhou Xtong Photovoltaic Technologies Co., Ltd.
	2.Suzhou Bright Photovoltaic Electronic Technology Co., Ltd.
	3.Jiangsu Haitian Microelectronics Corp.
	4.Changshu Friends Connector Technology Co., Ltd.
	5.Zerun Co., Ltd.
	6.QC Solar (Suzhou) Corporation.
	7. Zhejiang Forsol Energy Co., Ltd.
		GCL-N1xyz	Rated voltage =1500VDC
			Rated current =20A or 25A or 27A or 30 A
			Reverse current=48A
			
			GCL-N1xyz, where GCL-N1 is the main model of the box body, xyz is reserved as the model respectively, and the comparison relationship is as follows.
			1)"x" indicates the box size:
			x=4, indicating the junction box body size, positive and negative box body corresponding length *width * height =64,5mm x23,5mmx13,5mm.in the middle Box length (including handle length) * width * height =55,5mm(68,5mm) x23,5mm x13,5mm;
			2)"y" indicates the rated current of the junction box:
			y=1, rated current =20A;
			y=2, rated current=25A;
			y=3, rated current =27A;
			y=4, rated current=30A;
			3) "z" model is reserved for upgrade. standby option
				IEC 62790: 2020
				EN IEC 62790: 2020
					TÜV SÜD B 115225 0002 Rev.00

Cable	Wuxi Xinhongye Wire & Cabel Co., Ltd.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV SÜD B 101175 0001 Rev.00
	Suzhou Xtong Photovoltaic Technologies Co., Ltd.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV R 50453577

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ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

TÜVRheinland®	Customers reference no.: 2071098	TÜV Rheinland report no.: CN25T6WR 004 TÜV Rheinland project no.: 326132521, 326136855	Certificate: N/A File: Ammonia test CDF (For TUV Rheinland of N.A., Inc. use only)	Page 68 of 71

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	Suzhou Bright Photovoltaic Electronic Technology Co., Ltd.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV SÜD B 081180 0005 Rev.00
	Jiangsu Haitian Microelectronics Corp.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV R50450875
	Hefei GCL System Integration New Energy Technology Co., Ltd.	62930 IEC 131 1x2.5, 1x4.0, 1x6.0mm²	Max. Voltage = 1500VDC	IEC 62930: 2017	TÜV SÜD B 115225 0003 Rev.01
Connector	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR; PV-KST4-EVO2A/xy; PV-KBT4-EVO2A/xy	System voltage:1500V; rated current: 45A for 4,0mm² 53A for 6,0mm²	IEC 62852: 2014	TÜV R 60127169
	Hefei GCL System Integration New Energy Technology Co., Ltd.	GCL-01; GCL-02	System voltage:1500V; rated current: 30A for GCL-01(with 1x2,5mm²); 39A for GCL-02(with 1x2.5mm²) 41A for GCL-01(with 1x4.0mm²) 45A for GCL-02(with 1x4,0mm²); 46A for GCL-01(with 1x6,0mm²); 53A for GCL-02(with 1x6.0mm²)	IEC 62852: 2014	TÜV SÜD B 115225 0001 Rev.00
	Funing GCL System Integration Technology Co., Ltd.	GCL-01; GCL-02	System voltage:1500V; rated current: 30A for GCL-01(with 1x2,5mm²); 39A for GCL-02(with 1x2.5mm²) 41A for GCL-01(with 1x4.0mm²) 45A for GCL-02(with 1x4,0mm²); 46A for GCL-01(with 1x6,0mm²); 53A for GCL-02(with 1x6.0mm²)	IEC 62852: 2014	TÜV SÜD B 105673 0001 Rev.00
Bypass diode	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Suzhou Xtong Photovoltaic Technologies Co., Ltd. SUZHOU GOOD-ARK ELECTRONIC CO., LTD. NanTong GaoXin Science And Technology Development Co., Ltd. Jiangsu Changjing Electronics Technology Co., Ltd.	GCL3045	For GCL-N1xyz(y=1) Rated current: 20A IF(AV) =30A, VRRM=50V, Tj=200℃, 100mil, Trench, Single	—	—
		GCL4045	For GCL-N1xyz(y=2) Rated current: 25A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Single	—	—

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Kenny Zhu	Jonathan Zhang
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		GCL4045-B	For GCL-N1xyz(y=3) Rated current: 27A IF(AV) =40A, VRRM=50V, Tj=200℃, 150mil, Trench, Single	—	—
		GCL4045-B	For GCL-N1xyz(y=3) Rated current: 27A IF(AV) =40A, VRRM=50V, Tj=200℃, 165mil, Trench, Single	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 165mil, Trench, Single	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Double	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 180mil, Trench, Single	—	—
	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: YINYU Microelectronics (Zhejiang) Co., Ltd.	GCL3045	For GCL-N1xyz(y=1) Rated current: 20A IF(AV) =30A, VRRM=50V, Tj=200℃, 100mil, Trench, Single	—	—
		GCL4045	For GCL-N1xyz(y=2) Rated current: 25A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Single	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 165mil, Trench, Single	—	—
	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Suzhou Bright Photovoltaic Electronic Technology Co., Ltd.	GCL4045	For GCL-N1xyz(y=2) Rated current: 25A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Single	—	—

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Constructional Data Form for Photovoltaic Modules

		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 165mil, Trench, Single	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 180mil, Trench, Single	—	—
		GCL4045-B	For GCL-N1xyz(y=3) Rated current: 27A IF(AV) =40A, VRRM=50V, Tj=200℃, 150mil, Trench, Single	—	—
		GCL4045-B	For GCL-N1xyz(y=3) Rated current: 27A IF(AV) =40A, VRRM=50V, Tj=200℃, 165mil, Trench, Single	—	—
	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Yangzhou Yangjie Electronic Technology Co., LTD.	GCL4045	For GCL-N1xyz(y=2) Rated current: 25A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Single	—	—
		GCL5045	For GCL-N1xyz(y=4) Rated current: 30A IF(AV) =40A, VRRM=50V, Tj=200℃, 130mil, Trench, Double	—	—
Adhesive 1	Guangzhou Baiyun Technology Co., Ltd.	SMG533 (white or black)	Silicon	—	—
Adhesive 2	Shanghai Huitian New Material Co., Ltd	HT906Z	Silicon	—	—
Adhesive 3	GOLOHO POLYMER JIANGXI CO., LTD	GOLOHO-3901-HW (white or black)	Silicon	—	—
Adhesive 4	Jiangsu Tianchen New Materials Co., Ltd.	HT-8258 (white or black)	Silicon	—	—
Adhesive 5	Zhenjiang Raybond New Material TechnologyCo., LTD	RS-3300 (white or black)	Silicon	—	—
Adhesive 6	Hangzhou Zhiliang Silicone Co., ltd.	JS-606	Silicon	—	—
Adhesive 7	Zhenjiang Raybond New Material Technology Co., LTD	RS-3316 (white or black)	Silicon	—	—
Adhesive 8	Shanghai Huitian New Material Co., Ltd	4061	Silicon	—	—

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Adhesive 9	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Zhenjiang Raybond New Material TechnologyCo., LTD	GCL-Axy (x=0, y=5) (white or black)	Silicon	—	—
Adhesive 10	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Hangzhou Zhiliang Silicone Co., ltd.	GCL-Axy (x=0, y=6)	Silicon	—	—
Adhesive 11	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Zhenjiang Raybond New Material TechnologyCo., LTD	GCL-Axy (x=1, y=5) (white or black)	Silicon	—	—
Adhesive 12	Guangzhou Baiyun Technology Co., Ltd.	SS622E	Silicon	—	—
Potting 1 (junction box)	Guangzhou Baiyun Technology Co., Ltd.	SKF323 (white or black)	Silicon	—	—
Potting 2 (junction box)	Shanghai Huitian New Material Co., Ltd	5299W-S	Silicon	—	—
Potting 3 (junction box)	GOLOHO POLYMER JIANGXI CO., LTD	GOLOHO-313-A/GOLOHO-313-B	Silicon	—	—
Potting 4 (junction box)	Jiangsu Tianchen New Materials Co., Ltd.	HT-6360A/B	Silicon	—	—
Potting 5 (junction box)	Zhenjiang Raybond New Material TechnologyCo., LTD	RS-3200 (white or black)	Silicon	—	—
Potting 6 (junction box)	Hangzhou Zhiliang Silicone Co., ltd.	JS-1184	Silicon	—	—
Potting 7 (junction box)	H.B.Fuller(Suzhou) Advanced Material Co., Ltd.	1521	Silicon	—	—
Potting 8 (junction box)	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Zhenjiang Raybond New Material TechnologyCo., LTD	GCL-Py (y=5) (white or black)	Silicon	—	—
Potting 9 (junction box)	Hefei GCL System Integration New Energy Technology Co., Ltd. OEM manufacturer: Hangzhou Zhiliang Silicone Co., ltd.	GCL-Py (y=6)	Silicon	—	—

Remark: Ammonia test CDF
1.Critical materials: Front cover, Rear cover, Frame, Adhesive (frame), Junction Box.

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