

Additional Information Regarding Complaint on Visaka Solar Modules

VA vasimnaik@hbctcsolar.in
 Sat, 24 Aug 2024 7:26:31 PM +0530 •

To "CMED BIS" <complaints@bis.gov.in>

Cc "hindustanbluecoast" <hindustanbluecoast@gmail.com>, "HeadCMED" <headcmed@bis.gov.in>, "mnre" <mnre@nic.in>, "grievances-mnre" <grievances-mnre@nic.in>

Tags

Respected Deepak Lodwal sir,,

This is in reference to your email dated 23rd August 2024, concerning our complaint on Visaka Solar Modules, filed on 09th August 2024. We have attached the required additional information for your review, including:

1. Copy of Agreement and Purchase Order: Attached for your reference.
2. Photographs of Modules: We have included images that clearly display the BIS Registration Mark, Registration Number, and all other necessary marking details.
3. Nature of Deficiency: The specific issues encountered with the modules have been outlined, and we have also attached any available testing reports.
4. Location Details: We have compiled a detailed list of locations where the sub-standard modules have been installed. The full addresses and contact details of the concerned officials at these sites are provided in the attached Excel sheet for your ready reference.
5. Other Relevant Information: We have included an excel sheet for alerts of one site for reference. Also these modules are patented and claimed as Roof. Leakage issues are observed through modules, photographs attached for reference.

We hope this information will enable you to proceed with the investigation promptly. If any further details are required, please do not hesitate to contact us.

Thank you for your attention to this matter. We look forward to your prompt action.
Hard copy of the same documents below is sent through post.

Agreement.pdf

Alert List Atum Visaka.xlsx

DCR 16-05-2023.pdf

DCR 22-12-2022.pdf

DCR 134 - 1.pdf

DCR 134 - 2.pdf

DCR 24-01-2023.pdf

Invoice 24 Panel.pdf

Invoice 48 Panel.pdf

Invoice 96 Panel.pdf

Invoice 134 Pannel.pdf

IS_IEC_61730-1_Atum Visaka.pdf

Test report 48 No's.pdf

Test report 96 No's.pdf

Video 1.mp4

Video 2.mp4

Jaihind,



**VASIM RAZIYA AZIZ
NAIK**



**PM SURYA GHAR
EMPANELLED
VENDOR**

+91 7720073000 | 9423297595

vasimnaik@hbctcsolar.in

www.hbctcsolar.in

Shop No. 10, Arihant Square,

Aarogya Mandir, Ratnagiri, 415612

On Fri, Aug 23, 2024 at 11:29 AM CMED BIS <complaints@bis.gov.in> wrote:

महोदय,

This has reference to your letter dated 09.08.2024 bearing Ref. No. Nil, addressed to Secretary, MNRE and a copy of which has been endorsed to DG, BIS.

The complaint has been examined and in order to initiate an investigation into the matter, we request you to kindly provide us with the following additional information:

1. Copy of agreement and purchase order for supply of Solar Modules;
2. Photographs of the modules clearly showing BIS Registration Mark, Registration No. and all other marking details;
3. Specific nature of deficiency in the product. Also provide report(s) of testing, if available;
4. Complete address of the locations where such sub-standard modules have been supplied/installed along with contact details of the concerned official so that investigation may be arranged; and
5. Any other relevant information.

The information as mentioned above may kindly be provided within 7 days of receipt of this email so that further necessary action may be initiated at our end.

सादर,

दीपक लोदवाल, उप. निदेशक/वैज्ञानिक-सी

शिकायत प्रबंधन एवं प्रवर्तन विभाग

भारतीय मानक ब्यूरो मुख्यालय



012

తెలంగాణ తేలంగానా TELANGANA
S.NO: 2707 DATE 10/02/2020 RS 100/-
SOLD TO : M SHIVA SHANKAR
W/D/S/O : SATHYANARAYANA
FOR WHOM : VISAKA INDUSTRIES LTD
R/O : SEC-BAD


V 914849
The Advocate's Co-op Society
Rep by: Prahlad Patil, Licensed Stamp Vendor
Lic No. 16-09-0025 of 2014
Renewal License No 16-09-03/2020
City Civil Court Premises, Secunderabad,
Telangana State

DISTRIBUTOR AGREEMENT

This Distributor Agreement ("Agreement") is made and executed at Hyderabad on this 12-January-2022 (the "Effective Date"), by and between:

Visaka Industries Limited, a Public Limited Company incorporated under the Companies Act, 1956 and having its Corporate office at "Visaka Towers", 1-8-303/69/3, S. P. Road, Secunderabad, State of Telangana - 500 003, India represented by its General Manager- Legal- R. Rajanikanth. (hereinafter referred to as "VIL", which expression shall mean and include its, successors-in-office and permitted assigns);

AND

HINDUSTAN BLUE COAST TRADING (HBCTC) CO. Mr./Mrs. VASIM AZIZ NAIK, Age. 40 Yrs. (hereinafter referred to as "Distributor"), which expression shall mean and include its, successors-in-office, power of attorneys and permitted assigns);

VIL and HBCTC may be referred to hereinafter individually as a "Party" or collectively as "Parties".



WHEREAS,

VIL is one of the India's leading manufacturer of Corrugated Cement Fiber Sheets, New Age Building Products, Cement Fiber Boards, Panels, and Polyester Fiber Yarn etc., has launched product ATUM (Product), a unique Solar cement board solution, which serves all the functions of a traditional roof and generates the energy at the same time.

HBCTC desires to undertake the business of sales and marketing of the Product to various industrial and other Enterprises, Households and Retailers as per the terms and conditions set forth in this Agreement.

Now therefore, in consideration of the promises and the mutual agreements set forth herein, the parties agree as follows:

1. Appointment

VIL appoints Distributor, and Distributor accepts such appointment, as non-exclusive distributor/dealer of the Products in the Territory as defined in Clause 3 below. Distributor understands and acknowledges that he/she does not have an exclusive right to promote, market, sell or solicit sales of Product in the Territory. For the sake of brevity VIL reserves right to sell all or any of the Products to any other persons at any time in the Territory as defined in clause 3 to whom VIL wishes to sell.

2. Supply of Services

Distributor shall provide his/her Services in accordance with this Agreement. This Agreement determines the scope of services to be performed by the Distributor as per Annexure A. Annexure A forms an integral part of the Agreement without which the Agreement shall be deemed to be null and void.

3. Territory

Distributor is authorized by VIL to stock, sell, advertise and promote the sale and use of the Product in KONKAN REGION (Raigad, Ratnagiri & Sindhudug or REST OF MAHARASHTRA ("Territory")). Additions of any geographical areas to the Territory are subject to the prior written consent of VIL.

4. Term

This Agreement shall be effective from the Effective Date unless terminated pursuant to the terms hereof.

5. Order Placement, Price and Payment

5.1 The HBCTC shall place the order with VIL for supply of the products with remittance as provided in 'Annexure B' herein.



- 5.2 The Sale price of products by VIL to Distributor shall be at the rates chargeable as per the VIL's price list on the date of dispatch.
- 5.3 Each lot dispatched against an order shall be invoiced at VIL's prices to DISTRIBUTOR at the prices prevailing on the date of dispatch which when so invoiced shall be binding on the DISTRIBUTOR without any previous notice in that regard. VIL shall be entitled to vary the prices of the products at any time up to the date of dispatch.
- 5.4 The sale of the goods by VIL shall be on payment by RTGS/Demand Draft/cheque against supplies made as may be required by VIL from time to time. The Distributor shall pay the entire consignment value in advance, unless otherwise agreed by VIL in writing. The discretion of VIL on choice of mode of payment shall be final and binding upon the DISTRIBUTOR.
- 5.5 Such payment against dispatch shall always be of essence to the transaction, which VIL may accept to execute in whole or in part on receipt of the written order of supply from the DISTRIBUTOR.
- 5.6 Distributor shall be solely responsible for the payment of all costs and expenses of the services rendered by Distributor hereunder, including wages for his/her employees/servants etc.

6. Confidentiality of Information

The Distributor agrees and undertakes that he/she will not disclose any information which may be deemed to be confidential and may have been received in pursuance of this Agreement (with VIL). Any violation of this undertaking shall be construed as a breach of this Agreement and the damages (irrespective of the nature) shall be borne by the Distributor.

For this purpose, "Confidential Information" means such non-public information which is designated by either Party as confidential and/or which under the given circumstances ought to be treated as confidential and includes, inter alia, VIL's business policies or practices, business plans, dealings, customer lists or requirements, price lists or pricing structures, technical data, employee data or officers' data, product lines, designs, research and development activities and findings, ideas, concepts, know-how, other non-generic information whether tangible and/or intangible, written and/or oral, relating to any released or unreleased concepts, ideas, projects and services, marketing or promotion material of VIL and any other information received from other sources which VIL is obliged to treat as confidential.



During the term of this Agreement, its extensions or after termination, expiration or non-renewal of this Agreement, each party shall keep secret all Confidential Information of the other party. Further, each party shall use such care as it uses in maintaining the confidentiality of its own information. Each party shall use the Confidential Information of the other party only to the extent, purpose and in the course of performing its obligations under this Agreement.

7. Licenses, Permits and Authorizations

Each party represents and warrants that it shall obtain, maintain and preserve any licenses, permits or other authorizations necessary to conduct its business in accordance with this Agreement.

8. Termination of Agreement

8.1 This Agreement may be terminated upon written notice by the non-breaching party, upon the occurrence of any of the following events:

- (a) a party breaches any material term or provision of this Agreement and such breach is not cured within Thirty (30) days after receiving written notice of such breach;
- (b) a party makes an assignment for the benefit of creditors or is subject to any voluntary or insolvency or bankruptcy proceedings or admits its inability (in writing) to meet its contractual obligations;

8.2 The agreement shall be terminated by VIL without assigning any reason upon the occurrence of any of the following events.

- (a) the Distributor assists or performs services for any of VIL's competitors (directly or indirectly) and/or engages in any activity that adversely impacts VIL's area of business or operations.
- (b) a breach of confidentiality
- (c) the market demand is inadequate to sustain Distributor's operation; or
- (d) Change in structure or constitution of Distributor firm/Death of proprietor

8.3 However, either of the parties are at liberty to terminate this agreement by giving Two (2) months advance notice without assigning any reason.

8.4 Upon termination of this Agreement, the Distributor agrees to promptly hand over to VIL all marketing and technical information including brochures, documents, all such confidential and other information under this agreement on "as is where is" condition. During the period of notification of termination, the Distributor shall conclude all pending assignments /orders and VIL shall clear dues if any receivables before the final cessation of operations.



Upon termination of this Agreement, neither party shall be released from the payment of any sum owed to the other party or any other remedy for breach of this agreement.

9. Force Majeure

Neither party shall be liable to the other party for its failure to perform or delay in the performance of its obligations under this Agreement to the extent such failure or delay is caused beyond its reasonable control including, without limitation to, acts of God, fires, explosions, wars or other hostilities, insurrections, revolutions, strikes, labor unrest, earthquakes, floods, epidemics, pandemic or quarantine restrictions, unforeseeable governmental restrictions or controls or transportation embargoes or interruptions or terrorism, in each case if beyond the affected party's reasonable control. However, the party must provide written notice to the other party of such extraordinary circumstances that may prevent or delay the party's performance hereunder. If a party is prevented from performing its obligations under this Agreement because of such extraordinary circumstances for a period of one week (7 days).

consecutive days, then the other party may terminate this Agreement by giving thirty (30) days' notice with opportunity to perform until the date of such termination.

10. VIL Trade Names and Trademarks

"Trade Names" shall mean the names or trademarks of VIL, including ATUM or any variation or abbreviation thereof including all applications and registrations of such names, trademarks, trade name(s) or service mark(s) owned by VIL. Distributor shall not use the Trade Names as part of his/her trade name, trademark nor shall he/she permit such use to any other party. Distributor shall not cause to be published any advertisement or initiate any practice which might mislead or deceive the public or be detrimental to the goodwill of VIL. Distributor agrees, on being directed by VIL, to discontinue any advertising program conceptualized and provided by VIL. Distributor shall make no use of the Trade Names in any other business and shall not use the Trade Names except as set out in this Agreement. Failure to comply with VIL's policy on Trade Names can result in immediate termination of this Agreement.

11. Indemnification

Distributor shall defend, indemnify and hold harmless VIL, its holding / subsidiary / associate companies, affiliates, their officers, directors, shareholders, agents and employees (collectively, the "Indemnities") from and against all costs, expenses,



Handwritten signature in blue ink, with the number "5" written in the upper right corner of the signature area.

liabilities and losses reasonably incurred (including reasonable attorneys' fees and associated legal costs) arising out of:

11.1 claims related to the Goods and Service Tax (GST), income tax, labor laws or any other applicable laws arising solely due to Distributor's operations;

11.2 any loss, claim, damage to personal property or personal injury (whether occasioned to any third party, any Indemnity or any employee of Distributor) caused by the Distributor; and

11.3 the breach of any term of this Agreement by the Distributor causing any form of damage to VIL

12. Binding Effect

This Agreement shall be binding upon and be for the benefit of the parties and their respective successors and permitted assigns.

13. Severability

If any provision of this Agreement is held by a court of competent jurisdiction as invalid, illegal or unenforceable, then the remainder of this Agreement shall remain in full force and effect. In the event any such provision previously held as invalid, illegal or unenforceable is thereafter held (by a court of competent jurisdiction) to be valid, legal or enforceable then that provision shall automatically be revived and incorporated into this Agreement.

14. Waiver

Waiver of any rights or breach of any provision of this Agreement shall not constitute a waiver of any other right or breach of any other provision nor shall it be deemed to be a general waiver of such provision by the waiving party or a sanction of subsequent breach to the other party.

15. Assignment

Neither party shall assign this Agreement or any right or obligation here under to any third party without the prior written consent of the other party. In the event either party consents to such an assignment, then all provisions and obligations of this Agreement shall apply equally to any assignee to the same degree and effect as they apply to the assignor.



16. Modification

This Agreement may not be altered or modified except in writing duly executed by an authorized representative of each party.

17. Direct Sales

VIL reserves the right for itself and its affiliates to directly acquire and serve any customer in the Territory and to appoint other Distributors or agents who may sell within the Territory.

18. Relationship of Parties

The relationship of Distributor and VIL established under this Agreement is that of independent parties i.e. vendor and vendee. Nothing contained in this Agreement shall be construed to create a partnership, joint venture or agency between Distributor and VIL or to give Distributor the authority to act as the agent, legal representative, franchisee or employee of VIL for any purpose whatsoever. Further the Distributor will not assume, create or incur any expense, liability or obligation for VIL. Distributor shall be solely responsible for all costs and expenses incurred by him/her in connection with performance of his/her obligations under this Agreement.

19. Governing Law and Jurisdiction

This Agreement shall be governed by and construed in accordance with the laws of India. All disputes arising out of this agreement are subject to the exclusive jurisdiction of competent courts at Hyderabad.

20. Notices

20.1 All notices, requests or other communications to any party shall be sufficient if contained in a written instrument delivered in person, sent by fax or registered or certified mail or courier, addressed to such party at the address set forth below or such other address as may have been indicated separately.

20.2 The Distributor agrees to provide VIL with prompt written notice of any change in its Agency's name, ownership or organization. The Distributor also agrees to provide VIL with prompt written notice of the occurrence of any event which could jeopardize or materially impact its ability to perform his/her obligations under this Agreement.



- 20.3 VIL agrees to provide the Distributor with prompt written notice of any change in VIL's name, ownership or form of organization. VIL also agrees to provide the Distributor with prompt written notice of the occurrence of any event which could jeopardize or materially impact its ability to perform its obligations under this Agreement.

VIL:

Visaka Industries Limited
"Visaka Towers-1-8-303/69/3, S. P. Road,"
Secunderabad.
State of Telangana - 500 003
Telephone Number: (04027813833)

Distributor:

HINDUSTAN BLUE COAST TRADING CO.
"1024, GREEN HOUSE NAIK NAGAR"
KARWANCHI WADI, POMENDI BUDRUK, NEAR
AIR STATION, RATNAGIRI - 415612.
MAHARASHTRA
MOBILE NO: 9423297595/ 9860535060

Attn: R.Rajanikanth
General Manager - Legal

Attn: Mr VASIM AZIZ NAIK

Any notice sent in compliance with this section shall be effective on the date of delivery if delivered in person, on the date of confirmed transmission if sent by fax or on the date of receipt if delivered by courier.

21. This agreement may be executed in counterparts, each of which will be deemed to be an original, but both of which together will constitute one and the same agreement. One signed copy of agreement will be with Distributor and other copy will be retained by VIL.


22. Entire Agreement

This Agreement contains the entire agreement with respect to the subject matter and supersedes all prior arrangements, agreements or understandings with respect to this business relationship. No course of performance or prior dealings nor any custom or trade shall be relevant to explain any terms in this Agreement.




In witness whereof, the parties have caused this Agreement to be executed in duplicate originals by their duly authorized representatives as of the day and year written above.

For Visaka Industries Limited


R. Rajanikanth
General Manager - Legal



For HINDUSTAN BLUE COAST TRADING CO.


Authorized Signatory



WITNESSES

1. 
2. 

ANNEXURE-A

SCOPE OF SERVICES

1. VIL's Responsibilities:

- 1.1 Sell Product to Distributor for resale to Large, Small and Medium Enterprises, Households and Retailers.
- 1.2 Put reasonable efforts to supply Products ordered by Distributor in the quantities and at the times requested by Distributor.
- 1.3 Arrange sufficient quantity of Products to meet the requirements of the Corporate Customers/Customers.
- 1.4 Provide advertising, promotional, education and training support to the Distributor.

2. Distributor's Responsibilities:

- 2.1 Use his/her best efforts to sell and promote the sales in the Territory to meet the targets laid out by VIL from time to time.
- 2.2 Order and maintain an inventory of Product sufficient to meet the reasonable demand of the customers.
- 2.3 Provide an inventory list of Product stocked by the Distributor, indicating quantity per line item including sales information; Inventory list format and submission dates will be provided by VIL.
- 2.4 Receive and assist representatives of VIL for inventory reconciliation and periodic audits from time to time either at distributor's office or go down.
- 2.5 Provide at Distributor's own cost adequate number of sales personnel and infrastructure to promote, market, sell and solicit sales of Product.
- 2.6 Project the sales for the present financial year on a quarterly basis and for the next 2 years.



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2.7 To determine whether Distributor has fulfilled the requirements indicated above, VIL will review:

2.7.1 the infrastructure, strategies deployed and facilities by Distributor in marketing and selling Products in the Territory;

2.7.2 Distributor's sales performance on monthly basis compared to projected quarterly plan; and

2.7.3 Distributor's action plans to improve his/her business and promote the sale of Products.

2.7.4 Any contract of employment between Distributor and his/her employees shall clearly indicate that they are on the payroll of the Distributor and not working for VIL. Further the Distributor shall conform to all the applicable labor laws i.e. all his staff should be above 18 years of age, the employment conditions should be in conformance with the statutory laws etc.

2.8 Remain liable to deduct and deposit the tax at source under the Income Tax Act 1961 and comply with all other related statutory compliance's pertaining to his/her operations.

2.9 Distributor shall deliver the Products to the Corporate Customers/Customers on time based on the predefined schedule. In the event that the Distributor is unable to provide services to the Corporate Customers/Customers, he/she shall inform VIL at least 15 days in advance such that the Company can make alternate arrangements. If, the Distributor fails to inform VIL in time, the Company can penalize the Distributor for liquidated damages arising from such failure.

2.10 Notify VIL immediately of any spurious duplicates, infringement or misrepresentation of VIL's Products either delivered to Distributor or found in the market.

2.11 At its discretion, VIL may establish a credit line for Distributor, which he/she may draw upon for purchasing Products from VIL from time to time. The outstanding principal balance of such purchases will not exceed the limit of such credit line; the credit line is subject to change based on VIL's trade policies. Notwithstanding any credit line, it is understood and agreed that all product purchases by Distributor are payable according to the defined payment terms. Late payments shall bear interest @ of 1.5%




per month (18% per annum) provided that in no event shall VIL charge interest higher than the maximum rate allowed by law. Distributor shall pay VIL all expenses (including attorneys' fees) incurred by VIL in collecting any amounts due by him/her. VIL may withhold delivery of Products to Distributor until Distributor pays all past dues.

2.12 The Distributor shall indemnify and hold VIL harmless against any loss, claim or damage suffered by VIL on account of non-adherence or failure to perform any of his/her obligations under this Agreement.


2.13 VIL, without liability to Distributor or obligation to notify Distributor may discontinue or limit its production at any point of time.

For Visaka Industries Limited


R. Rajanikanth
General Manager- Legal



For HINDUSTAN BLUE COAST TRADING CO.


Authorized Signatory



ANNEXURE-B

SERVICE RATE SCHEDULE

- a) The Distributor shall purchase a minimum quantity of 48 Nos (2 pallets) from VIL (1997 mm x 1027mm x 17mm) and the Distributor shall pay on pro-rata basis for purchasing additional units. The Distributor shall pay the entire consignment value in advance, unless otherwise agreed by VIL.
- b) The Distributor shall not charge the consumer a price above the Maximum Retail Price (MRP) as printed by VIL from time to time. However, the Distributor may resell Products at prices below the maximum retail prices based on the market conditions. VIL retains the right to revise the MRP from time to time.
- c) In direct Atum Module sales or Solar Project sales we keep Rs. 0.50/Wp to Rs.2/Wp (i.e. 1-3 %) commission for Dealer/Distributor on total Atum Module cost or Solar project cost.

For Visaka Industries Limited


R. Rajanikanth
General Manager - Legal



For HINDUSTAN BLUE COAST TRADING CO.


Authorized Signatory



GridUVP 02	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 14:37 UTC+05:30	2024/06/26 14:43 UTC+05:30
GridUFP 04	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 14:37 UTC+05:30	2024/06/26 14:43 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 09:54 UTC+05:30	2024/06/26 09:59 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 09:38 UTC+05:30	2024/06/26 09:49 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 08:56 UTC+05:30	2024/06/26 09:01 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 08:05 UTC+05:30	2024/06/26 08:10 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 07:39 UTC+05:30	2024/06/26 07:44 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 07:22 UTC+05:30	2024/06/26 07:33 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 06:51 UTC+05:30	2024/06/26 07:01 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 06:40 UTC+05:30	2024/06/26 06:46 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/26 06:08 UTC+05:30	2024/06/26 06:19 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/25 19:10 UTC+05:30	2024/06/26 06:03 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/25 18:59 UTC+05:30	2024/06/25 19:05 UTC+05:30
GridUVP 02	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/25 18:48 UTC+05:30	2024/06/25 18:54 UTC+05:30
GridUFP 04	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/25 18:48 UTC+05:30	2024/06/25 18:54 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/25 18:20 UTC+05:30	2024/06/25 18:26 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/25 16:19 UTC+05:30	2024/06/25 16:29 UTC+05:30
PvIsoFault 56	Closed	Warning	Inverter	SL1ES125N5Q063	2024/06/25 15:55 UTC+05:30	2024/06/25 16:13 UTC+05:30



VISAKA INDUSTRIES LIMITED[®]

CORP. OFF.: "VISAKA TOWERS" 1-8-303/69/3, S.P. ROAD, SECUNDERABAD - 500 003.

TEL: (+91-40) - 27813833, 27813835, FAX: (+91-40) - 27813837, 27891833 www.visaka.in e-mail: vil@visaka.in

Dr. 16/05/2023

Solar PV Modules DCR Declaration

To,

Hindustan Blue Coast Trading Co.

1024, Green House,

Nali Nagar, Karwanchiwadi,

Pomendi Budruk,

Ratnagiri,

Maharashtra-415612, India.

Sub: Certificate for our modules meeting Domestic content requirements under Invoice no: 23128310008.

Sir,

Here we M/s. VISAKA INDUSTRIES LIMITED (ATUM DIVISION), having registered address at Survey No 95 & 96, Adjacent to Kulkadim Railway Station, Kulkadim Post, Gajalapuram, Madugupapally, Nalgonda, Telangana - 508202, hereby certify and declare the following:

Under the contract/purchase agreement executed between M/s. Hindustan Blue Coast Trading Co., and M/s. VISAKA INDUSTRIES LIMITED (ATUM DIVISION) vide invoice no: 23128310008 and dated: 28th Apr-2023, the modules supplied to your company under the shipment id: 16052023002, bearing serial nos of all the modules supplied along with respective invoices and receipt certificates enclosed herewith have been manufactured indigenously, in our factory registered in India, and cells manufactured by M/s. Adani Solar Cells (Mundra Solar Pvt. Ltd.) in India have been used in our modules. Our modules comply with Domestic content requirements as laid down by Ministry of New and Renewable Energy as incorporated in the guidelines being implemented by Solar Energy Corporation of India limited.

1. The Manufacturing process has been carried out in India from the stage of finished Cells till modules at our facility and neither we nor our Cells supplier have used Semi-finished/tilor cells in this process.
2. The above information is complete and accurate in all material respects, and there is no material information omitted from this certificate that makes the information contained herein misleading or inaccurate.
3. We shall maintain, and present upon request, to inspection committee of MNRE/SECI, further documentation necessary to support this certificate. Further we shall not bar the inspection committee of MNRE/SECI from visiting our factory /installations in related to agreement between our company and MNRE/SECI or their representative.

Signed this ___ date of 16th May/2023.

For Visaka Industries Limited (Atum Division)

Signature & name of the authorized representative of the module manufacturer.

Regd. Office & Factory (A.C. Division I): Survey No. 315, Yeluntala Village, R.C. Puram Mandal, Medak District - 502 300 (A.P.)

Factory (A.C. Division II) Behind Supa Gas Marikenthram Village, Paramath-Velur Taluq, Namakkala District - 637 207 Tamil Nadu

Factory (A.C. Division III) Changelol Mouza, Bankibundh, G.P.No. 4, Saliboni block, Midnapore West (W.B.) 721147

Factory (A.C. Division IV) No. 27/1, G. Nagenahalli Village, Kora Hobli, Tumkur- 572138, (Karnataka State)

Factory (A.C. Division V) Vill. Kannawan, PS Bachrawan, Tehsil Maharajgunj, Dist Raibareilly - UP-229 301

Factory (A.C. Division VI) Survey No. 385.386, Jujjur Village, Veerullapadu Mandal, Near Kanchika Cherla, Krishna District-521 181 (A.P.)

Factory (A.C. Division VII) 70/3A, 70/3, Sahapur Industrial Area, Nandur (Village), Daund (Taluka), Pune District-412 020, Maharashtra

Factory (A.C. Division VIII) Plot No.2006,1994, Khata No 450,As-Paramanapur Manejwan, Navamunda Village Sambalpur Dist.-768200

Factory (V-Boards Division) Gajalapuram Village, Peddadevalapally Post, Tripuramam Mandal, Near Miryalaguda, Nalgonda Dist-508 207

Factory (Textile Division) Survey No. 179 & 180 Chiniva Village, Mouda Taluk, Nannur District, Maharashtra



VISAKA INDUSTRIES LIMITED[®]

CORP. OFF.: "VISAKA TOWERS" 1-8-303/69/3, S.P. ROAD, SECUNDERABAD - 500 003.

TEL: (+91-40) - 27813833, 27813835, FAX: (+91-40) - 27813837, 27891833 www.visaka.in e-mail: vil@visaka.in

Dr: 16.05.2023

Solar PV Modules DCR Declaration

To,

Hindustan Blue Coast Trading Co.

1026, Green House,

Raik Nagar, Karwanchiwad,

Premnadi Budruk,

Rainagiri,

Maharashtra-415612, India.

Subj: Certificate for our modules meeting Domestic content requirements under Invoice no: 22128310197.

Sir,

Here we M/s. VISAKA INDUSTRIES LIMITED (ATUM DIVISION), having registered address at Survey No 95 & 96, Adjacent to Kukkadam Railway Station, Kukkadam Post, Gajalapuram, Madhupally, Nalgonda, Telangana – 508202, hereby certify and declare the following:

Under the contract/purchase agreement executed between M/s. Hindustan Blue Coast Trading Co., and M/s. VISAKA INDUSTRIES LIMITED (ATUM DIVISION) vide invoice no: 22128310197 and dated: 31st March 2023, the modules supplied to your company under the shipment id: **18052023001**, bearing serial nos of all the modules supplied along with respective invoices and receipt certificates enclosed herewith have been manufactured indigenously, in our factory registered in India, and cells manufactured by M/s. Adani Solar Cells(Mundra Solar Pvt. Ltd.) in India have been used in our modules. Our modules comply with Domestic content requirements as laid down by Ministry of New and Renewable Energy as incorporated in the guidelines being implemented by Solar Solar Energy Corporation of India Limited.

1. The Manufacturing process has been carried out in India from the stage of finished Cells till modules at our facility and neither we nor our Cells supplier have used Semi-finished/Blue cells in this process.
2. The above information is complete and accurate in all material respects, and there is no material information omitted from this certificate that makes the information contained herein misleading or inaccurate.
3. We shall maintain, and present upon request, to inspection committee of MNRE/SEC, further documentation necessary to support this certificate. Further we shall not bar the inspection committee of MNRE/SEC from visiting our factory /installations in related to agreement between our company and MNRE/SEC or their representative.

Signed this ___ date of 16th May 2023.

For Visaka Industries Limited (Atum Division)

Signature & name of the authorized representative of the module manufacturer.

Regd. Office & Factory: (A.C. Division I): Survey No. 315, Yelumala Village, R.C. Puram Mandal, Medak District - 502 300 (A.P.)
Factory : (A.C. Division II) Behind Supa Gas Manikantham Village, Paramathi-Velur Taluq, Namakkala District - 637 207 Tamil Nadu
Factory : (A.C. Division III) Chendrol Mouza, Bankibundh, G.P.No. 4, Saliboni block, Midnapore West (W.B.) 721147
Factory : (A.C. Division IV) No. 27/1, G. Nagenahalli Village, Kora Hobli, Tumkur- 572138, (Karnataka State)
Factory : (A.C. Division V) VIII. Kannawan, PS Bechrawan, Tehsil Maharajgun, Dist Raibareilly - UP-229 301
Factory : (A.C. Division VI) : Survey No. 385,386, Jujjur Village, Veenullapadu Mandal, Near Kanchika Cherla, Krishna District-521 181 (A.P.)
Factory : (A.C. Division VII) : 70/3A, 70/3, Sahajpur Industrial Area, Nandur (Village), Daund (Taluka), Pune District-412 020. Maharashtra.
Factory : (A.C. Division VIII) : Plot No 2006,1994, Khata No 450 At-Paramanapur Manejwan, Navamurda Village Sambalpur Dist.-768200
Factory : (V-Boards Division) : Gajalapuram Village, Poddadevairapally Post, Tripuramam Mandal, Near Miryalaguda, Nalgonda Dist.-508 207
Factory : (Textile Division) : Survey No. 174 & 180, Chiniva Villana, Monda Taluk, Nandur District, Maharashtra



VISAKA INDUSTRIES LIMITED®

CORP OFF : "VISAKA TOWER", 1-8-303/69/3, S.P. ROAD, SECUNDERABAD - 500 003.
TEL : +91-40-2781 3833, 2781 3835, www.visaka.co E-mail : vil@visaka.in

Dr: 22.12.2022

Solar PV Modules DCR Declaration

To,

Hindustan Blue Coast Trading Co.

1024, Green House,

Naik Nagar, Kanchiwaradi,

Pomendi Budruk,

Ranagiri.

Sub: Certificate for our modules meeting Domestic content requirements under Invoice no: 22128310101.

Sir,

Here we M/s. VISAKA INDUSTRIES LIMITED (ATUM DIVISION), having registered address at Survey No 95 & 96, Adjacent to Kukkadam Railway Station, Kukkadam Post, Gajjalapuram, Madugulapally, Nalgonda, Telangana - 508207, hereby certify and declare the following:

Under the contract/purchase agreement executed between M/s. Hindustan Blue Coast Trading Co., and M/s. VISAKA INDUSTRIES LIMITED (ATUM DIVISION) vide invoice no: 22128310101 and dated: 17th Oct 2022, the modules supplied to your company under the shipment Id : 22122022001, bearing serial nos of all the modules supplied along with respective invoices and receipt certificates enclosed herewith have been manufactured indigenously, in our factory registered in India, and cells manufactured by M/s. Adani Solar Cells (Mundra Solar Pvt. Ltd.) in India have been used in our modules. Our modules comply with Domestic content requirements as laid down by Ministry of New and Renewable Energy as incorporated in the guidelines being implemented by Solar Energy Corporation of India Limited.

1. The Manufacturing process has been carried out in India from the stage of finished Cells till modules at our facility and neither we nor our Cells supplier have used Semi-finished/Blue cells in this process.
2. The above information is complete and accurate in all material respects, and there is no material information omitted from this certificate that makes the information contained herein misleading or inaccurate.
3. We shall maintain, and present upon request, to inspection committee of MNRE/SECI, further documentation necessary to support this certificate. Further we shall not bar the inspection committee of MNRE/SECI from visiting our factory /installations in related to agreement between our company and MNRE/SECI or their representative.

Signed this ___ date of: 22nd Dec/2022.

For Visaka Industries Limited (Atum Division)

Signature & name of the authorized representative of the module manufacturer.

Ragd. Office & Factory	: A.C. Division I, Survey No. 315, Yelumala Village, R.C. Puram Mandal, Sanga Reddy District, T.S. Pin 502 300.
Factory : A.C. Division II	: Survey No. 170/1, Manikantham Village, Paramathi-Volur Taluq, Namsakkal District, Tamil Nadu, Pin 637 207.
Factory : A.C. Division III	: GAT No. 70/3A & 70/3A/3 & 70/1B & 70/1C, Sahajpur Industrial Area, Nandur (V), Daund (Tq), Pune, Maharashtra, Pin 412 020.
Factory : A.C. Division IV	: Plot No.11, 12, 18 To 21 & 30, Changsele Mouza, Bankibundh G.P.No. 4, Salboni Midnapur West, W.B, Pin 721 147.
Factory : A.C. Division V	: Survey No. 96/2A 90/2B 27/1, G.Nageshalli Village, Kempnaddodderi Post, Keerur Road, Kora Hobli, Tumkur Dist, Karnataka, Pin 572 138.
Factory : A.C. Division VI	: Village & Post, Kannawan, PS Bachrawan, Tehsil Maharajganj, Dist Raebareli, U.P, Pin 229 301.
Factory : A.C. Division VII	: Survey No. 385, 386, Juljuru (V), Near Kanchikacharla, Veenulapadu (M), Krishna Dist, A.P, Pin 521 181.
Factory : A.C. Division VIII	: Plot No. 1994 (P) 2006, Khata No. 450, Chaka No. 727, Paramanpur (V), P.S. Sason, Tehsil Maneswar, Sambalpur Dist, Odisha, Pin 768 200.
Factory : Textile Division	: Survey No. 179 & 180, Chiruva Village, Mouda Taluk, Nagpur District, Maharashtra, Pin 441 104.
Factory : V-Boards Division I	: Gajjalapuram Village, Kukkadam Post, Vemulapally Mandal, Adjacent to Kukkadam Railway Station, Nalgonda Dist, T.S, Pin 508 207.
Factory : V-Boards Division II	: GAT No : 248 & 261 to 269, Delhadi Village, Daund Taluq, Pune Dist, Maharashtra, Pin 412 214.
Factory : V-Boards Division III	: Mustil Nos. 106, 107 & 115, Jhaswa Village, P.S. & Tehsil Saiswas, Jhajjar, Haryana, Pin 124 146.

**VISAKA INDUSTRIES LTD**Survey No 95,96, Gajalapuram-Village,
Peddadevullapally -Post,, Tripuraram-Mandal
Near Miryalguda, Nalgonda- 508207.Doc No # : VIL-QC-IV TEST
Date Created: 26-April-2018
Date Issued : 26-April-2018
Rev No. : AA
Originator: Sriram**Title :- IV TEST RESULTS****IV TEST RESULTS**

Invoice No:-	22128310101
Invoice Date:-	17-Oct-22
Invoice Qty:-	134
MODEL No:-	S-FG-01-072A-375W
Customer Name:-	Hindustan Blue Coast Trading Co .
Report No:-	22122022001

IV Test Results: -

SL No	Serial No	Voc	Isc	PMAX	Vpm	IPm	Fill Factor
1	VIL120223873035	49.469757	9.840199	376.917664	40.584492	9.287233	77.428856
2	VIL120223873036	49.48428	9.684627	376.294403	40.917377	9.196445	78.519516
3	VIL120223873054	49.62196	9.692858	376.215637	41.08075	9.157954	78.218796
4	VIL120223873052	49.560692	9.692098	376.666412	41.125988	9.158842	78.415474
5	VIL120223873049	49.337727	9.694862	375.582306	41.044868	9.15053	78.520729
6	VIL120223873050	49.597416	9.763762	379.654175	41.054276	9.247617	78.399261
7	VIL120223873040	49.459095	9.760438	378.211273	40.904114	9.24629	78.34639
8	VIL120223873043	49.100399	9.738949	375.952972	40.6735	9.243193	78.620605
9	VIL120223873045	49.409271	9.701506	375.868561	40.902325	9.189419	78.413063
10	VIL120223873046	49.46426	9.669369	375.943359	40.948811	9.180812	78.601852
11	VIL120223873025	49.570068	9.735832	377.810944	41.163719	9.178251	78.285606
12	VIL120223873044	49.53957	9.73278	376.606598	40.940525	9.198871	78.108582
13	VIL120223873026	49.594879	9.702608	377.58136	41.045006	9.199203	78.466675
14	VIL120223873048	49.577724	9.695352	377.291656	41.00296	9.201571	78.492302
15	VIL120223873047	49.49107	9.728501	377.677368	40.975906	9.217059	78.441917
16	VIL120223873038	49.584255	9.684772	378.024658	41.226276	9.169507	78.720337
17	VIL120223873037	49.594276	9.617984	377.551575	41.285854	9.144817	79.151779
18	VIL120223873041	49.645264	9.612896	377.788574	41.310192	9.145166	79.162003
19	VIL120223873042	49.592804	9.672059	378.143707	41.111866	9.197921	78.835037
20	VIL120223873060	49.588688	9.672942	377.984863	41.177315	9.179444	78.80127
21	VIL120223872067	49.566307	9.637131	376.127991	41.210636	9.126965	78.741074
22	VIL120223873039	49.582283	9.643947	376.942322	41.021008	9.189007	78.830376
23	VIL120223873017	49.563347	9.650182	375.264893	40.981514	9.156931	78.458824
24	VIL120223873018	49.583168	9.632112	376.235352	41.193909	9.133276	78.777802
25	VIL120223873006	49.601368	9.710508	377.747406	41.096748	9.191662	78.427055
26	VIL120223873020	49.595387	9.64657	375.156219	41.036983	9.141906	78.41478
27	VIL120223873013	49.650051	9.709583	378.596985	41.205837	9.187946	78.533852
28	VIL120223873023	49.592503	9.650466	376.05835	41.349285	9.094677	78.57618

Prepared by

Checked by

Approved by

**VISAKA INDUSTRIES LTD**Survey No 95,96, Gajalapuram-Village,
Peddadevullapally -Post, Tripuraram-Mandal
Near Miryalguda, Nalgonda- 508207.Doc No # : VIL-QC-IV TEST
Date Created: 26-April-2018
Date Issued : 26-April-2018
Rev No. : AA
Originator: SriramTitle :- **IV TEST RESULTS**

106	VIL120223932003	49.550591	9.624475	376.700523	41.307308	9.119467	78.9897
107	VIL120223873062	49.632057	9.602806	377.112762	41.353455	9.119257	79.124466
108	VIL120223871040	49.591602	9.600455	376.884338	41.394527	9.10469	79.160423
109	VIL120223871059	49.573978	9.609041	376.275787	41.540077	9.058139	78.990059
110	VIL120223871058	49.548759	9.657187	376.395111	41.317669	9.109786	78.661201
111	VIL120223871057	49.390827	9.645033	377.928772	41.115894	9.191792	79.334106
112	VIL120223871008	49.381298	9.653422	375.348511	41.06152	9.141126	78.739182
113	VIL120223873051	49.549362	9.637189	375.65213	41.185688	9.120939	78.667877
114	VIL120223873059	49.464638	9.707455	379.183685	41.322426	9.17622	78.96769
115	VIL120223871017	49.459774	9.706788	379.213257	41.320747	9.177309	78.987045
116	VIL120223871019	49.556061	9.691704	379.055817	41.399574	9.156032	78.923492
117	VIL120223871055	49.510918	9.688642	378.138855	41.316879	9.152164	78.829254
118	VIL120223871015	49.517235	9.695466	378.192017	41.305363	9.156002	78.774796
119	VIL120223871053	49.601135	9.61347	379.011658	41.572899	9.116796	79.464192
120	VIL120223871056	49.452782	9.665671	379.061371	41.277447	9.183256	79.302483
121	VIL120223871066	49.434296	9.788296	379.64328	41.01062	9.257195	78.458549
122	VIL120223871072	49.666798	9.691944	379.969269	41.626396	9.128085	78.935326
123	VIL120223871063	49.542336	9.70205	379.334869	41.607883	9.116899	78.919212
124	VIL120223873061	49.437916	9.698739	376.36322	41.099789	9.157303	78.493141
125	VIL120223932004	49.411156	9.70152	375.38623	41.172035	9.117505	78.309334
126	VIL120223873057	49.416245	9.69328	375.92041	40.894581	9.192426	78.479355
127	VIL120223873056	49.303051	9.697692	375.140137	41.053188	9.137905	78.460548
128	VIL120223873066	49.455437	9.701587	376.521484	40.797939	9.228933	78.475288
129	VIL120223873075	49.547405	9.710902	378.448822	40.995796	9.231406	78.65506
130	VIL120223873053	49.560452	9.723136	378.269928	41.058258	9.213005	78.498291
131	VIL120223873071	49.44286	9.708779	375.818085	41.014568	9.163039	78.290565
132	VIL120223873076	49.44738	9.69935	375.951233	40.885745	9.195167	78.387276
133	VIL120223873063	49.493324	9.684585	377.295715	41.18502	9.160995	78.714417
134	VIL120223873078	49.427788	9.712976	375.235687	40.676388	9.224902	78.159302

Revision History Page

Document Number	Issue Date	Originator	Revision	Reason for update
VIL-QC-IV TEST	26-April-2018	Sriram	AA	New document creation

Prepared by

Checked by

Approved by

**VISAKA INDUSTRIES LTD**Survey No 95,96, Gajalapuram-Village,
Peddadevullapally -Post., Tripuraram-Mandal
Near Miryalguda, Nalgonda- 508207.Doc No # : VIL-QC-IV TEST
Date Created: 26-April-2018
Date Issued : 26-April-2018
Rev No. : AA
Originator: Sriram**Title :- IV TEST RESULTS**

68	VIL120223871007	49.860176	9.655335	378.002594	41.370956	9.136908	78.518799
69	VIL120223873065	49.856419	9.640521	379.742432	41.540951	9.141399	79.007355
70	VIL120223871062	49.383648	9.706852	376.34137	41.051311	9.167584	78.509171
71	VIL120223871054	49.469543	9.699264	375.865356	40.682217	9.239058	78.334969
72	VIL120223871065	49.665428	9.721199	377.370514	41.076416	9.187036	78.161682
73	VIL120223871064	49.598476	9.697317	377.588806	41.029087	9.202954	78.505341
74	VIL120223871070	49.402218	9.695688	376.151733	40.941807	9.187472	78.530434
75	VIL120223871069	49.37574	9.698063	376.017456	40.922684	9.188484	78.525269
76	VIL120223871060	49.300667	9.69597	375.429291	40.913769	9.176111	78.538773
77	VIL120223873060	49.403099	9.637999	375.443695	41.04781	9.146498	78.85038
78	VIL120223873058	49.449879	9.645947	375.760132	41.092541	9.144241	78.777214
79	VIL120223871074	49.547749	9.625043	375.765411	41.125828	9.13697	78.793457
80	VIL120223871073	49.569298	9.666212	377.309875	41.214516	9.154781	78.746101
81	VIL120223871067	49.554344	9.626315	376.506561	41.307384	9.114752	78.927933
82	VIL120223871068	49.513878	9.682934	376.590881	41.382561	9.100231	78.548134
83	VIL120223871050	49.325008	9.745144	375.306854	40.572247	9.250335	78.07843
84	VIL120223933019	49.550053	9.634421	375.72467	41.435555	9.067688	78.704567
85	VIL120223871052	49.508598	9.670133	375.630707	40.97575	9.167147	78.459953
86	VIL120223873008	49.545803	9.62106	376.065186	41.214886	9.124499	78.892067
87	VIL120223871014	49.620583	9.641771	375.423645	41.226456	9.106378	78.469879
88	VIL120223873004	49.447929	9.613176	376.235992	41.266499	9.117226	79.148979
89	VIL120223873005	49.395958	9.646449	376.596375	41.139709	9.154084	79.034592
90	VIL120223873007	49.665703	9.622262	377.791809	41.389225	9.127782	79.053078
91	VIL120223873003	49.541759	9.624874	377.955475	41.39415	9.13065	79.263672
92	VIL120223873002	49.548279	9.589263	375.452393	41.276382	9.096058	79.020737
93	VIL120223873001	49.528816	9.580187	375.442017	41.294853	9.091739	79.124489
94	VIL120223932036	49.64185	9.689346	379.224823	41.254513	9.192324	78.841408
95	VIL120223932037	49.539433	9.571051	375.377319	41.362629	9.075277	79.169403
96	VIL120223932038	49.592918	9.596911	377.367157	41.519505	9.088913	79.289009
97	VIL120223873072	49.331131	9.672005	377.751099	41.106503	9.18957	79.171371
98	VIL120223873074	49.537373	9.666528	376.189209	41.250946	9.11953	78.560242
99	VIL120223932001	49.582314	9.605092	377.048004	41.63858	9.055256	79.171402
100	VIL120223873077	49.579472	9.59825	377.548309	41.687572	9.056615	79.337509
101	VIL120223873064	49.599319	9.687099	378.216278	41.298531	9.158105	78.7174
102	VIL120223873067	49.510281	9.686721	378.511139	41.308784	9.16297	78.923538
103	VIL120223873080	49.552502	9.611985	375.931305	41.416248	9.076904	78.927773
104	VIL120223871051	49.491993	9.696318	378.485077	41.196953	9.187211	78.869118
105	VIL120223873055	49.46265	9.654266	377.351196	41.169224	9.165856	79.022186

Prepared by

Checked by

Approved by

Page 3 of 5

**VISAKA INDUSTRIES LTD**

Survey .No 95,96, Gajalapuram-Village,
Peddadevullepally –Post., Tripuraram-Mandal
Near Miryalguda, Nalgonda- 509207.

Doc No # : VIL-QC-IV TEST
Date Created: 26-April-2018
Date Issued : 26-April-2018
Rev No. : AA
Originator: Sriram

Title :- IV TEST RESULTS

Prepared by

Checked by

Approved by



VISAKA INDUSTRIES LIMITED®

CORP OFF : "VISAKA TOWER", 1-8-303/69/3, S.P. ROAD, SECUNDERABAD - 500 003.
TEL : +91-40-2781 3833, 2781 3835, www.visaka.co E-mail : vil@visaka.in

Dr: 24.01.2023.

Solar PV Modules DCR Declaration

To,
Hindustan Blue Coast Trading Co.,
1034, Green House,
Nelli Nagar, Naravandiwadi,
Pomendi Budruk,
Retnagiri, Maharashtra-415612.
India.

Sub: Certificate for our modules meeting Domestic content requirements under Invoice no: 22695310009.

Sir,

Here we M/s. VISAKA INDUSTRIES LIMITED (ATUM DIVISION), having registered address at Survey No 95 & 96, Adjacent to Kukkadam Railway Station, Kukkadam Post, Gajalapuram, Madugula Taluqa, Nalgonda, Telangana – 509207, hereby certify and declare the following:

Under the contract/purchase agreement executed between M/s. Hindustan Blue Coast Trading Co. and M/s. VISAKA INDUSTRIES LIMITED (ATUM DIVISION) vide invoice no: 22695310009 and dated: 14th Jan 2023, the modules supplied to your company under the shipment id: 23012023001, bearing serial nos of all the modules supplied along with respective invoices and receipt certificates enclosed herewith have been manufactured indigenously, in our factory registered in India, and cells manufactured by M/s. Adani Solar Cells (Mundra Solar Pvt. Ltd.) in India have been used in our modules. Our modules comply with Domestic content requirements as laid down by Ministry of New and Renewable Energy as incorporated in the guidelines being implemented by Solar Energy Corporation of India Limited.

1. The Manufacturing process has been carried out in India from the stage of finished Cells till modules at our facility and neither we nor our Cells supplier have used Semi-finished/Blue cells in this process.
2. The above information is complete and accurate in all material respects, and there is no material information omitted from this certificate that makes the information contained herein misleading or inaccurate.
3. We shall maintain, and present upon request, to inspection committee of MNRE/SEC, further documentation necessary to support this certificate. Further we shall not bar the inspection committee of MNRE/SEC from visiting our factory /installations in related to agreement between our company and MNRE/SEC or their representative.

Signed this _____ date of 24th Jan 2023.

For Visaka Industries Limited (Atum Division)

Signature & name of the authorized representative of the module manufacturer.

Regd. Office & Factory	: A.C. Division I, Survey No. 315, Yelumala Village, R.C. Puram Mandal, Sanga Reddy District, T.S, Pin 502 300.
Factory : A.C. Division II	: Survey No. 170/1, Mahikaatham Village, Paramathi-Velur Taluq, Namakkal District, Tamil Nadu, Pin 637 207.
Factory : A.C. Division III	: GAT.No.70/3A & 70/3A/3 & 70/1B &70/1C, Sahajpur Industrial Area, Nandur (V), Daund (Tq), Pune, Maharashtra, Pin 412 020.
Factory : A.C. Division IV	: Plot No.11, 12,18 To 21 & 30, Changsole Mouza, Bankibundh G.P. No. 4, Solsoni Midnspur West, W.B, Pin 721 147.
Factory : A.C. Division V	: Survey No. 90/2A 90/2B 27/1, G.Nagenhalli Village, Kempnadodderi Post, Kestur Road, Kera Hobli, Tumkur Dist, Karnataka, Pin 572 138.
Factory : A.C. Division VI	: Village & Post, Kannawan, PS Bachrawan, Tehsil Maharajgunj, Dist Raebareilly, U.P, Pin 229 301.
Factory : A.C. Division VII	: Survey No. 385, 386, Jujuru (V), Near Kanchikacherla, Veerulapadu (N), Krishna Dist, A.P, Pin 521 181.
Factory : A.C. Division VIII	: Plot No. 4994 (P) 2005, Khata No. 450, Chaka No. 727, Peeramanpur (V), P.S. Sason, Tehsil Maneswar, Sambalpur Dist, Odisha, Pin 766 200.
Factory : Textile Division	: Survey No. 179 & 180, Chiruva Village, Mouda Taluk, Nagpur District, Maharashtra, Pin 441 104.
Factory : V-Boards Division I	: Gajalapuram Village, Kukkadam Post, Vemulapally Mandal, Adjacent to Kukkadam Railway Station, Nalgonda Dist, T.S, Pin 508 207.
Factory : V-Boards Division II	: GAT No : 248 & 261 to 289, Delwadi Village, Daund Taluq, Pune Dist, Maharashtra, Pin 412 214.
Factory : V-Boards Division III	: Mustil Nos. 106, 107 & 115, Jhaswa Village, P.S. & Tehsil Salawas, Jhajjar, Haryana, Pin 124 146.

INVOICE

HINDUSTAN BLUECOAST TRADING CO. 22-23 Shop No 10, Arihant Square Beside Sate Bank of India Arogya Mandir- Ratnagiri GSTIN/UIN: 27AHNPN2699C1ZY State Name : Maharashtra, Code : 27 Contact : 9423297595 E-Mail : vasimnaik@hbctcsolar.in	Invoice No. 7822	Dated 31-Mar-23
Supplier (Bill from) Visaka Industries Limited Viska Towers Sardar Patel Road Begumpet, Secunderabad Telangana India GSTIN/UIN : 36AAACV7263K1ZY State Name : Telangana, Code : 36	Supplier Invoice No . & Date. 22128310197 dt. 31-Mar-23	

SI No.	Description of Goods	Quantity		Rate	per	Amount
		Shipped	Billed			
1	Atum Solar Roof Panels VIL -375AM <i>Batch : VIL 120230111038</i> <i>Batch : Primary Batch</i> <i>Batch : VIL 120230111041</i> <i>Batch : VIL 120230111042</i> <i>Batch : VIL 120230111003</i> <i>Batch : VIL 120230111031</i> <i>Batch : VIL 120230111029</i> <i>Batch : VIL 120230111034</i> <i>Batch : VIL 120230111032</i> <i>Batch : VIL 120230111035</i> <i>Batch : VIL 120230111036</i> <i>Batch : VIL 120230111037</i> <i>Batch : VIL 12030111040</i> <i>Batch : VIL 12030111033</i> <i>Batch : VIL 120230111002</i>	24 Nos 1 Nos 10 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos	24 Nos 1 Nos 10 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos 1 Nos	11,250.00	Nos	2,70,000.00
	IGST					32,400.00
	Total	24 Nos	24 Nos			₹ 3,02,400.00

Amount Chargeable (in words) INR Three Lakh Two Thousand Four Hundred Only	E. & O.E
Company's GSTIN/UIN : 36AAACV7263K1ZY	for Visaka Industries Limited Authorised Signatory

INVOICE

HINDUSTAN BLUECOAST TRADING CO. 22-23 Shop No 10, Arihant Square Beside Sate Bank of India Arogya Mandir- Ratnagiri GSTIN/UIN: 27AHNPN2699C1ZY State Name : Maharashtra, Code : 27 Contact : 9423297595 E-Mail : vasimnaik@hbctcsolar.in	Invoice No. e-Way Bill No. Dated 4422 14-Jan-23 Supplier Invoice No. & Date. Other References 22695310009 dt. 14-Jan-23
Supplier (Bill from) VISAKA INDUSTRIES LIMITED - PUNE Gatt No. 262 to 269 Delwadi Village, Daund Taluka Pune GSTIN/UIN : 27AAACV7263K1ZX State Name : Maharashtra, Code : 27	

SI No.	Description of Goods	Quantity		Rate	per	Amount
		Shipped	Billed			
1	Atum Solar Roof Panels VIL -375AM <i>Batch : Primary Batch</i> <i>Batch : VIL 120225021062</i> <i>Batch : VIL 120225021055</i> <i>Batch : VIL 120225032005</i> <i>Batch : VIL 120225021056</i> <i>Batch : VIL 120225021056</i> <i>Batch : VIL 120225021048</i> <i>Batch : VIL 120225021057</i> <i>Batch : VIL 120225031091</i> <i>Batch : VIL 120225021047</i> <i>Batch : VIL 120225031075</i> <i>Batch : VIL 120225021053</i> <i>Batch : VIL 120230111017</i> <i>Batch : VIL 120225262026</i> <i>Batch : VIL 120230111025</i> <i>Batch : VIL 120230111001</i> <i>Batch : VIL 120230112016</i> <i>Batch : VIL 120225252050</i> <i>Batch : VIL 120230111004</i> <i>Batch : VIL 120225252049</i>	48 Nos	48 Nos	11,250.00	Nos	5,40,000.00
	SGST					32,400.00
	CGST					32,400.00
	Total	48 Nos	48 Nos			₹ 6,04,800.00

Amount Chargeable (in words) E. & O.E
INR Six Lakh Four Thousand Eight Hundred Only

Company's GSTIN/UIN : **27AAACV7263K1ZX**

for **VISAKA INDUSTRIES LIMITED - PUNE**

 Authorised Signatory

INVOICE

HINDUSTAN BLUECOAST TRADING CO . Shop No 10, Arihant Square Beside State Bank of India Arogya Mandir- Ratnagiri GSTIN/UIN: 27AHNPN2699C1ZY State Name : Maharashtra, Code : 27 Contact : 9423297595/7720073000 E-Mail : vasimnaik@hbctcsolar.in	Invoice No. 24	Dated 28-Apr-23
	Supplier Invoice No. & Date. 23128310008 dt. 28-Apr-23	Other References
Supplier (Bill from) Visaka Industries Limited Viska Towers Sardar Patel Road Begumpet, Secunderabad Telangana India GSTIN/UIN : 36AAACV7263K1ZY State Name : Telangana, Code : 36		

SI No.	Description of Goods	Quantity		Rate	per	Amount
		Shipped	Billed			
1	Atum Solar Roof Panels VIL -375AM <i>Batch : Primary Batch</i>	96 Nos 96 Nos	96 Nos 96 Nos	11,942.71	Nos	11,46,500.16
	IGST					1,37,580.02
	Total	96 Nos	96 Nos			₹ 12,84,080.18

Amount Chargeable (in words)

E. & O.E

INR Twelve Lakh Eighty Four Thousand Eighty and Eighteen paise Only

Company's GSTIN/UIN : **36AAACV7263K1ZY**

for Visaka Industries Limited

Authorised Signatory

INVOICE

HINDUSTAN BLUECOAST TRADING CO. 22-23 Shop No 10, Arihant Square Beside Sate Bank of India Arogya Mandir- Ratnagiri GSTIN/UIN: 27AHNPN2699C1ZY State Name : Maharashtra, Code : 27 Contact : 9423297595 E-Mail : vasimnaik@hbctcsolar.in	Invoice No. e-Way Bill No.	Dated
	922	17-Oct-22
Supplier (Bill from) Visaka Industries Limited Viska Towers Sardar Patel Road Begumpet, Secunderabad Telangana India GSTIN/UIN : 36AAACV7263K1ZY State Name : Telangana, Code : 36	Supplier Invoice No. & Date.	Other References
	22128310101 dt. 17-Oct-22	

SI No.	Description of Goods	Quantity		Rate	per	Amount
		Shipped	Billed			
1	Atum Solar Roof Panels VIL -375AM <i>Batch : Primary Batch</i> <i>POWER GENERATING SYSTEM</i>	134 Nos 134 Nos	134 Nos 134 Nos	9,937.50	Nos	13,31,625.00
	IGST					1,59,795.00
	Total	134 Nos	134 Nos			₹ 14,91,420.00

Amount Chargeable (in words)

E. & O.E

INR Fourteen Lakh Ninety One Thousand Four Hundred Twenty Only

Company's GSTIN/UIN : **36AAACV7263K1ZY**

for Visaka Industries Limited

Authorised Signatory



SUMMARY OF TEST REPORT No. 4789949365-BIS-S2, DATED(mm/dd/yyyy): 10/28/2021

ULR No. TC616821100000893F

(Number of pages in test report: Page no.1 to 66)

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

1. Name of manufacturer:	Visaka Industries Limited (Atum Division)		
2. Product:	Crystalline Silicon Photovoltaic (PV) Modules		
3. Model:	72 Full Cell Mono crystalline models Representative Model: VIL-375M Series Model: VIL-370M		
4. Model differences provided (if applicable): Yes/No	YES		
5. Model differences verified as per MNRE Guidelines for series formulation: Yes/No	YES		
6. Test Results:			
SL. NO.	TEST REQUIREMENTS	CLAUSE	VERDICT
1	Application Classes	3	P
2	Construction Requirements	4	P
3	Polymeric Materials	5	P
4	Internal Wiring and current-carrying Parts	6	P
5	Connections	7	P
6	Bonding and Grounding	8	P
7	Creepage and clearance distances	9	P
8	Field Wiring compartments with covers	10	P
9	Marking	11	P
10	Requirements for supplied documents	12	P

General Information:

- The conformity certificates of critical components are verified to ensure complete testing of Product under test and details regarding harmonized IEC/UL Standards (where IS standards are not available) are also provided in the list of critical components.

CONCLUSION:

- Sample meets all relevant requirements of IS/IEC 61730-1:2004 + A1:2017+A2:2017: Yes
- ~~Sample fails to meet the following test requirements:~~

I, hereby, undertake that the verdict stated in the test reports for all the tests matches with the test results. The sample meets all relevant requirements of IS/IEC 61730-1:2004 + A1:2017+A2:2017. ~~does not meet the requirements stated above at 2) of conclusion.~~ If any deviation is found, suitable punitive action may be taken by BIS

Date(mm/dd/yyyy): 10/28/2021

Digitally signed by Srimathy N
Date: 2021.10.28 18:58:59
+05'30'

(Signature of Authorized person)




Test Report issued under the responsibility of:

TEST REPORT
IS/IEC 61730-1
PV Module Safety Qualification
Part 1: Requirements for construction

Report Number	4789949365-BIS-S2
ULR Number	TC616821100000893F
Test Request	SC21SPI00508
Date of issue(mm/dd/yyyy)	10/28/2021
Total number of pages	66
Applicant's name	VISAKA INDUSTRIES LIMITED (ATUM DIVISION)
Address	Survey No 95 & 96, Adjacent to Kukkadam Railway Station, Kukkadam Post, Gajalapur, Madugulapally, Nalgonda-508207, Telangana, India.
Test specification:	
Standard	IS/IEC 61730-1:2004 + A1:2017+A2:2017
Test procedure	IS/IEC 61730-1:2004 + A1:2017+A2:2017
Non-standard test method	N/A
Test Report Form No	IS/IEC 61730-1_V1.0
Test Report Form(s) Originator	BIS
Master TRF	Dated 19.02.2018



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
Test item description	Photovoltaic (PV) Module(s)		
Trade Mark			
Manufacturer	VISAKA INDUSTRIES LIMITED (ATUM DIVISION)		
Address	Survey No 95 & 96, Adjacent to Kukkadam Railway Station, Kukkadam Post, Gajalapur, Madugulapally, Nalgonda-508207, Telangana, India.		
Model/Type reference	Representative Model: VIL-375M Series Model: VIL-370M		
Ratings	Maximum System Voltage: 1500V Maximum over current protection rating: 14A See specific model rating in General Product information		



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict

Testing procedure and testing location:			
<input checked="" type="checkbox"/>	Testing Laboratory:		
Testing location/address.....:	UL INDIA PVT. LTD. LABORATORY BUILDING, KALYANI PLATINA CAMPUS, SURVEY. NO. 129/4, EPIP ZONE, PHASE II, WHITEFIELD, IN- 560066, BANGALORE, INDIA		
Tested by (name + signature)	Viswanathan K	K. Viswanathan	Digitally signed by K. Viswanathan Date: 2021.10.28 18:24:37 +05'30'
Approved by (name + signature)	N Srimathy	Srimathy N	Digitally signed by Srimathy N Date: 2021.10.28 18:59:40 +05'30'
Issued by (name + signature)	Kantha Raju H S	Kantha Raju	Digitally signed by Kantha Raju Date: 2021.10.28 19:06:59 +05'30'



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict

List of Attachments (including a total number of pages in each attachment):

Annex 1: Construction Details – 2 Pages (28-29)

Annex 2: List of measurement Equipment page – 1 Pages (30)

Annex 3: Enclosures Page (Reports/Certificates and manual) – 35 Pages (31-65)

Annex 4 : Electrical data of PV modules page – 1 Pages (66)

Summary of testing:

Tests performed (name of test and test clause):

Model VIL-375M from Mono cell families were considered as representative of all series with same component

All models are same in construction except output power and electrical ratings.

3. Application Classes

4. Construction Requirements

5. Polymeric Materials

6. Internal Wiring and current-carrying Parts

7. Connections

8. Bonding and Grounding

9. Creepage and clearance distances

10. Field Wiring compartments with covers

11. Marking

12. Requirements for supplied documents

Testing location:

UL INDIA PVT. LTD.

LABORATORY BUILDING,

KALYANI PLATINA CAMPUS, SURVEY. NO. 129/4,

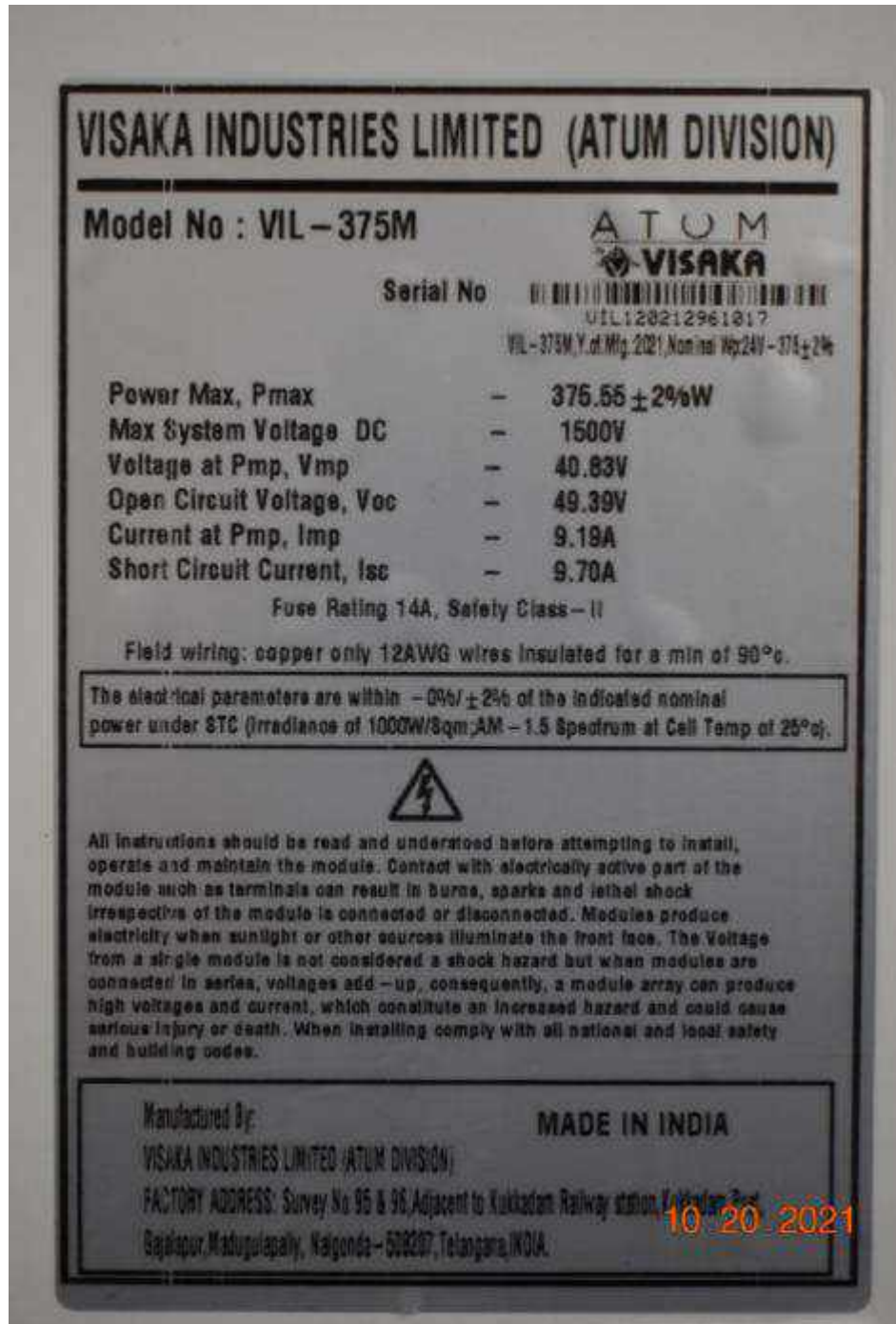
EPIP ZONE, PHASE II, WHITEFIELD, IN-560066,

BANGALORE, INDIA

The product fulfils the requirements of IS/IEC 61730-1:2004 (First Edition) + A1:2017 + A2:2017 (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)

Copy of marking plate:

Back label for Representative Model: VIL-375M



Note: Photo Date format (mm/dd/yyyy)

Inside laminate Marking label



Inside laminate marking label with serial No. "VIL120212961017".
as declared by the manufacturer, 5th to 8th digits from left "2021" representing manufactured Year, 9th and 10th digit from left "29" representing manufactured week of the year, 11th digit "6" represents the day of the week (That is Saturday).

Note: Photo Date format (mm/dd/yyyy)

Junction Box and connectors with polarity marked



Connectors with polarity marked



Series Model Back Labels :

VISAKA INDUSTRIES LIMITED (ATUM DIVISION)

Model No : VIL - 370M **ATUM**
VISAKA

Serial No U I L 1 2 0 2 1 2 9 6 1 0 2 1
U I L 1 2 0 2 1 2 9 6 1 0 2 1
VIL - 370M, Y. of Mfg. 2021, Nominal Wp 24V - 370 ± 2%

Power Max, Pmax	- 370.56 ± 2%
Max System Voltage DC	- 1500V
Voltage at Pmp, Vmp	- 40.70V
Open Circuit Voltage, Voc	- 40.36V
Current at Pmp, Imp	- 9.11A
Short Circuit Current, Isc	- 9.68A

Fuse Rating 14A, Safety Class - II

Field wiring: copper only 12AWG wires insulated for a min of 90°C.

The electrical parameters are within -0% to +2% of the indicated nominal power under STC (irradiance of 1000W/m² AM - 1.5 Spectrum at Cell Temp of 25°C).

All instructions should be read and understood before attempting to install, operate and maintain the module. Contact with electrically active part of the module such as terminals can result in burns, sparks and lethal shock irrespective of the module is connected or disconnected. Modules produce electricity when sunlight or other sources illuminate the front face. The Voltage even a single module is not considered a shock hazard but when modules are connected in series, voltages add - up, consequently, a module array can produce high voltages and current, which constitute an increased hazard and could cause serious injury or death. When installing comply with all national and local safety and building codes.

Manufactured By **MADE IN INDIA**
 VISAKA INDUSTRIES LIMITED (ATUM DIVISION)
 FACTORY ADDRESS: Survey No. 15 & 51 Adjacent to Kakkerah Railway station, Kakkerah Post,
 Taluk of Madugula, Walgonda - 502007, Telangana, INDIA

Inside Laminate of model series:

A T U M

by **VISAKA**

U I L 1 2 0 2 1 2 9 6 1 0 2 1

VIL - 370M, Y. of Mfg. 2021, Nominal Wp 24V - 370 ± 2%

Logo of Make in India:



Logo is common for all the models

The marking plate above represents all models covered by this report except for difference in electrical ratings and model designation. See "General product information" for electrical ratings for all models

Test item particulars:

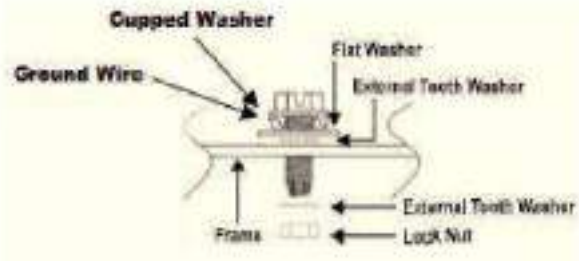
Accessories and detachable parts included in the evaluation.....:

Grounding the Array:

Attach a separate conductor to one of the 4mm diameter grounding holes marked on the Module frame with a screw and nut that incorporates an external tooth washer. This is to ensure positive electrical contact with the frame.

It is recommended to ground each module frame at the provided grounding holes (4 mm or 5/32-inch diameter, marked with the grounding symbol).

The modules can be connected at the grounding holes using stainless steel nut, bolt, start washer and flat washer of size M4

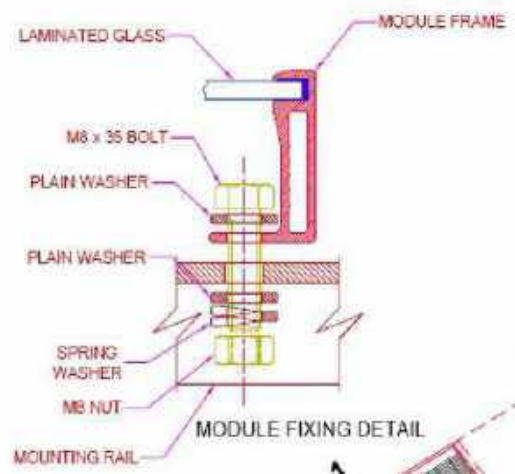


The grounding screw, bolt or other parts are separately used from the mounting parts of the module. The grounding is achieved through securement to the array frame. The torque rating provided for grounding means is 2.8 Nm [25 in.-lbs].

Mounting system used.....:

Mounting Method:

The frame of each Module has 8mm x 12mm mounting holes used to secure the modules to supporting structure. The Module frame must be attached to a supporting structure using M8 stainless steel bolt hardware together with hex nut, spring washers and 2nos of plain washers in four places (i.e. minimum number holes to be used are 4 mounting holes) symmetrical on the SPV Module. The applied torque is about 8 Newton-meters.



Other options included:

N/A



Possible test case verdicts:	
- test case does not apply to the test object... : N/A	
- test object does meet the requirement : P (Pass)	
- test object does not meet the requirement .. : F (Fail)	
Abbreviations used in the report:	
Pmax – Maximum power	PD – Partial Discharge
Vpm – Maximum power voltage	RTI/RTE – Relative Thermal Endurance Index
Ipm – Maximum power current	STC – Standard Test Conditions
Isc – Short circuit current	TC – Thermal Cycling
Voc – Open circuit voltage	CTI – Comparative Tracking Index
FF – Fill factor	MST – Module Safety Test
Testing : Refer individual test date	
Date of receipt of test item(mm/dd/yyyy) : 07/03/2021	
Date (s) of performance of tests(mm/dd/yyyy): 10/20/2021	

General remarks:	
"(See Enclosure #)" refers to additional information appended to the report.	
"(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
This Test Report Form is intended for the investigation of PV modules in accordance with IS/IEC 61730-1. It can only be used together with IS/IEC 61730-2 Test Report.	
Name and address of factory (ies) : VISAKA INDUSTRIES LIMITED (ATUM DIVISION)	
Survey No 95 & 96, Adjacent to Kukkadam Railway Station, Kukkadam Post, Gajalapur, Madugulapally, Nalgonda-508207, Telangana, India.	



General product information:	All models are same in construction output power and electrical ratings System Voltage: 1500V
PV module type reference	VIL-375M (Representative Model)
<u>Product Electrical Ratings at STC</u>	
Nominal maximum power (Pmax)	375.55 W
Nominal open circuit voltage at (Voc)	49.39 V
Nominal short circuit current at (Isc)	9.70 A
Nominal maximum power voltage (Vpm)	40.83 V
Nominal maximum power current (Ipm)	9.19 A
<u>Product Safety Ratings</u>	
Maximum systems operating voltage	1500 V
Maximum over-current protection rating	14 A
Safety application class	Class A
Safety class in accordance with IEC 61140	Class II
Fire safety class	Class C
Recommended maximum series/parallel module configurations	24 modules in series for 72 cell Model series Note: Refer Annex 4 for all electrical ratings of all series model



Scope of Module Safety Qualification Testing:

- Initial module safety qualification
- Extension of module safety qualification

Original test report ref. no. :

Model differences and modification:

- | | |
|---|--|
| <input type="checkbox"/> Change in cell technology | <input type="checkbox"/> Change in cell interconnect materials/technique |
| <input type="checkbox"/> Modification to encapsulation system | <input type="checkbox"/> Modification to junction box/el. termination |
| <input type="checkbox"/> Modification to superstrate | <input type="checkbox"/> Change in el. circuit of an identical package |
| <input type="checkbox"/> Modification to backsheet/substrate | <input type="checkbox"/> Higher or lower output by 10 % |
| <input type="checkbox"/> Modification to frame/mounting structure | <input type="checkbox"/> Increase in module size |
| <input type="checkbox"/> Removal of frame | |

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



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
3	Application Classes		P
	The module has been evaluated for the following Application Class (Class A, B, C) :	Class A	P
4	Construction Requirements		P
4.1	General requirements		
4.1.1	It is stated that the module is able to operate under environmental condition type AB8 according to IEC 60364-5-51.	Air temperature: -40°C to 85°C Rel. Humidity: < 85% RH	P
4.1.2	The module/s is/are completely assembled when shipped from the factory.		P
	The module is provided in subassemblies.		N/A
4.1.3	Incorporation of a module into the final assembly does not require any alteration of the module from its originally evaluated form. If YES, specific details describing necessary modification(s) are provided in the installation instructions.	No modification required	P
4.1.4	If the module must bear a definite relationship to another module, it is constructed to permit incorporation into the final assembly without the need for alteration.	-	N/A
4.1.5	The construction of the module is such that ground continuity is not interrupted by installation.	-	N/A
4.1.6	Parts of the module are prevented from loosening or turning, if such loosening or turning may result in a risk of fire, electric shock, or injury to persons.	JB is secured by adhesive material to back skin	P
4.1.7	Friction between surfaces is not used as the sole means to inhibit the turning or loosening of a part.	-	P
4.1.8	Any adjustable or movable structural part is provided with a locking device to reduce the likelihood of unintentional movement.	-	N/A
4.2	Metal parts		----
4.2.1	Metals used in locations that are exposed to moisture shall not be employed alone or in combinations that could result in deterioration, such that the product would not comply with the requirements in this standard.	Only Aluminium and stainless steel used	P
4.2.2	Iron or mild steel serving as a necessary part of the module but not exposed to the weather are plated, painted, or enamelled for protection against corrosion.	-	N/A
4.2.3	Simple sheared or cut edges and punched holes are not required to be additionally protected.	-	N/A



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
5	Polymeric Materials		P
5.1	General		
	Polymeric materials serving as an enclosure for live metal parts	See Subclause 5.2	—
	Polymeric materials serving as support for live metal parts	See Subclause 5.3	—
	Polymeric materials serving as the outer surface for the module	See Subclause 5.4	—
	Polymeric materials serving as superstrate or a substrate which provide rigid reinforcement or serve as the carrier for the active cells		—
	a) If the superstrate or substrate polymers are intended for contact with active cells	See Subclause 5.3	—
	b) If the superstrate or substrate polymers are intended for use as an outer surface	See Subclause 5.4	—
	c) If superstrate or substrate polymers are intended for both contact with active cells or other circuit elements and for use as the outer surface	See Subclause 5.3 and 5.4	—
	Polymeric materials serving as barriers	See Subclause 5.5	—
	All polymeric materials have a minimum relative thermal endurance index (electrical and mechanical, as defined by IEC 60216-5) of 20 °C above the maximum measured operating temperature of said material in application, as measured during the Temperature Test MST 21 given in IS/IEC 61730-2.	All materials are at least 20°C above maximum measured temperature. Tested as per temperature test clause MST-21 in IS/IEC 61730-2	P
5.2	Polymers serving as an enclosure for live parts		
	Information is provided that polymers serving as an enclosure for live parts comply with:		—
	a) 5-V flammability rating (IEC 60695-11-20)	Junction Box is IEC 62790 certified; certificate is attached in Annex 3	P
	b) 5-V flammability rating, after water immersion and exposure of the end-product (IEC 60695-11-20)	Suitable for outdoor use with respect to exposure to UV and Water Exposure based on UL 746C. Still maintains 5-VA rating.	P
	c) Ultraviolet radiation resistance (ANSI/UL 746C or ISO 4892-2)	Junction Box base and cover material f1 rated in accordance with UL 746C	P



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	d) Minimum hot wire ignition rating of 30 (IEC 60695-2-20)	Hot wire ignition rating of Junction Box base and cover material is ≥ 120 (In accordance with UL 746C)	P
5.3	Polymers serving to support live parts		---
	Information is provided that polymers serving to support live parts comply with:		—
	a) Flammability classification and high-current arc ignition rating (IEC 60695-11-10) as given in Table 1 of IS/IEC 61730-1	Junction Box base and cover flammability rating is 5VA, HAI ≥ 120	P
	b) Comparative Tracking Index (CTI) ≥ 250	System Voltage is above 600 V	N/A
	Comparative Tracking Index (IEC 60112)	N/A	—
	c) Inclined plane tracking rating of 1 h, using the time to track method at 2.5 kV (IEC 60587), if the maximum system operating voltage rating is in the range 600 V – 1500 V.	Connectors are certified and certificate are attached in Annex 3	P
	Maximum system operating voltage rating (V):	1500V	—
	d) Ultraviolet radiation resistance (ANSI/UL 746C or ISO 4892-2)	Junction Box base and cover material f1 rated in accordance with UL 746C.	P
5.4	Polymers serving as an outer surface		---
	Information is provided that polymeric substrates or superstrates used in the module have:		—
5.4.1	A relative thermal endurance index, both electrical and mechanical, as determined in accordance with IEC 60216 of at least 90 °C.....	Manufactured by: Renewsys India Private Limited, Type: Preserv 1 300 WD, Thickness: 0.395mm, Color: WT, RTI: 140, Flame Spread Index: 30, Partial Discharge: 4.17kV	P
	A relative thermal endurance index of at least 20 °C above the maximum measured operating temperature of the material as measured during the Temperature Test MST21 of IS/IEC 61730-2.	Refer to Temperature Test table MST-21	P
5.4.2	Polymeric materials that serve as the outer enclosure for a module that (1) is intended to be installed in a multi-module or -panel system or (2) have an exposed surface area greater than 1 m ² or a single dimension larger than 2 m, has a maximum flame spread index of 100 as determined under ASTM E162-1990.....	Manufactured by: Renewsys India Private Limited, Type: Preserv 1 300 WD, Thickness: 0.395mm, Color: WT, RTI: 140, Flame Spread Index: 30, Partial Discharge: 4.17kV	P



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.3	If exposed to direct sunlight in the application, the polymeric material has been evaluated for ultraviolet (UV) radiation resistance as determined in accordance with ANSI/UL 746C or ISO 4892-2.	Manufactured by: Renewsys India Private Limited, Type: Preserv 1 300 WD, Thickness: 0.395mm, Color: WT, RTI: 140, Flame Spread Index: 30, Partial Discharge: 4.17kV	P
5.4.4	Polymeric materials intended for use as a superstrate or substrate, without appropriate IEC insulation pre-qualification, comply with the requirements of the Partial Discharge Test MST 15 of IS/IEC 61730-2.	Manufacturer submitted the Partial Discharge letter from Lab has been verified and attached the Annex 3	P
5.5	Polymers serving as barriers		
	Insulation barriers are of adequate thickness and of a material appropriate for the application, as defined by IEC 61140	See Annex 1 for constructional details	N/A
	Barriers or liners are held in place and are not adversely affected	No Barriers/ Liners	N/A
5.6	Polymers serving as structural glazing materials		
	Polymers serving as structural glazing materials comply with the requirements for safety glazing by material certification (ANSI Z97.1-93) or by testing in accordance with Module Breakage Test MST 32 of IS/IEC 61730-2.	Refer to Module Breakage test table MST-32 results	P
Supplementary information: N/A			

6	Internal Wiring And Current-Carrying Parts		
	Any current-carrying part and wiring has the mechanical strength and current-carrying capacity necessary for its application.	Cell Connectors: Manufactured by: NEOCAB Type: Cross section: 0.9X0.20 mm, Material: Base Cu \geq 99.95%, Coating Sn60%Pb40%. String Connectors: Manufactured by: NEOCAB Type: Cross section: 0.3X5.0 mm, Material: Base Cu \geq 99.95%, Coating Sn60%Pb40%.	P
6.1	Internal wiring		
6.1.1	Wiring used within a module has an insulation rating for a minimum of 90 °C, with a gauge and voltage rating acceptable for the application as defined by the requirements of IEC 60189-2.	See Annex 1 for constructional details	P



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2	The wiring of a module is located so that after installation of the module in the intended manner the insulation is not exposed to degrading effects of direct sunlight.	Wire is sunlight resistant	P
6.2	Splices		
	Splices are insulated equivalent to that required for the wiring involved.	No Splices	N/A
6.3	Mechanical securement		
6.3.1	Joints or connections are mechanically secure and provide electrical contact without strain on connections and terminals.	Tabbing are connected to terminals without any strain.	P
6.3.2	Uninsulated live parts are secured to its supporting surface so that they are prevented from turning or shifting in position.	-	N/A
Supplementary information: N/A			

7	Connections		---
7.1	Field connections - general requirements		---
7.1.1	The module is provided with wiring terminals, connectors, or leads to accommodate current-carrying conductors of the load circuit.	Leads are provided	P
7.1.2	Field connections are rated for exposure to direct sunlight as defined in Clause 5 of IS/IEC 61730-1.	Connectors are sunlight resistant.	P
	Field connections are exposed to the degrading effects of direct sunlight.	-	N/A
7.2	Field wiring terminals		
7.2.1	Field wiring terminal blocks are rated for the appropriate voltage and current for the application and constructed in compliance with IEC 60947-1.	See Annex 1 for constructional details	P
7.2.2	Wiring terminals integral to the construction of the terminal enclosure comply with the following requirements:	-	N/A
7.2.2.1	Screws and nuts which clamp external conductors have a thread conforming with ISO 261 or ISO 262 (or comparable standards)	See Annex 1 for constructional details	P
	The screws and nuts used for field wiring do not serve to fix any other component.	-	N/A
7.2.2.2	Terminal screws have a minimum nominal thread diameter as shown in Table 2 of IS/IEC 61730-1.	See Annex 1 for constructional details	P
	Stud terminals are provided with nuts and washers.		P



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.2.3	Terminals are designed that they clamp the conductor between metal surfaces with sufficient contact pressure and without damage to the conductor.	-	N/A
	Terminals are designed or located that the conductor cannot slip out when the clamping screws or nuts are tightened.	-	N/A
	Terminals are fixed suitably when the means of clamping the conductor is tightened or loosened:	-	N/A
	a) the terminal itself does not work loose,	-	N/A
	b) internal wiring is not subjected to stress,	-	N/A
	c) creepage distances and clearances are not reduced below the values specified in clause 9 of IS/IEC 61730-1.	-	N/A
7.3	Connectors		
7.3.1	The connector intended for use in the output circuit of the module is rated for the appropriate voltage and current, as per the requirements of the IEC 61984 series.	See Annex 1 for constructional details	P
	Connectors comply with the requirements of Clause 5 of IS/IEC 61730-1, with respect to flammability, comparative tracking index and relative thermal endurance index for the support of live parts.		P
7.3.2	The connector has been appropriately evaluated for disconnect overload performance.	Connector is suitable for assembly only. Marking according to clause 11.3 "Do not disconnect under load" has been provided.	P
7.3.3	Connectors intended for exposure to the outdoor environment are enclosed by material which complies with the following:		---
	a) UV resistance in accordance with the requirements of Clause 5.		P
	b) Resistance to inclusion of water acc. to IEC 60529 (equivalent to IP55)	IP68, as per IEC 62852	P
	c) Steel ball impact test acc. to IEC 60065, subclause 12.1.3 and Figure 8 with a vertical drop distance of 1 m.	Connector is already tested, and IEC test certificate is attached in annex 3	P
	d) Accessibility Test MST 11 of IS/IEC 61730-2	Refer to Accessibility Test table MST-11 results	P
7.3.4	Separable multi-pole connectors are polarised.		N/A



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	If two or more separable connectors are provided, they are configured or arranged so that the other will not accept the mating connector for one.	--	N/A
7.3.5	For a connector incorporating a grounding member, the grounding member is the first to make and the last to break contact with the mating connector.	-	N/A
7.3.6	Connectors that can be separated without the use of a tool do not have accessible conductive parts, as determined under the Accessibility Test MST 11 of IS/IEC 61730-2.	Refer to Accessibility Test table MST-11 results	P
7.4	Output lead or cables		
	Leads extending from the module are rated for the appropriate system voltage, ampacity, wet locations, temperature and sunlight resistance.	The output cables are rated, 1x4mm ² sizes. -40°C-+90°C, wet or dry sunlight resistant.	P
Supplementary information: N/A			

8	Bonding And Grounding		---
8.1	If accessible conductive parts of the module form a perimeter framing or mounting system, or if the module has a conductive surface area of greater than 10 cm ² accessible after installation, then the module has provisions for grounding.	Pre drilled grounding holes provided, with grounding symbol	P
8.2	If the module is rated as safety class II and provided with provisions for functional grounding, the functional grounding is isolated from live parts by reinforced insulation (Subclause 7.3.2.2 of IEC 61140).	Application Class A, provides safety class II acc. to sec. 3.2	P
8.3	Each exposed conductive part of the module, that is assessable during normal operation, is bonded together, as verified by Ground Continuity Test MST 13 of IS/IEC 61730-2. <i>Note: If conductive materials are used only as fasteners for installation and separated from the conductive components of the module by both appropriate insulation and spacings, they are not required to be bonded.</i>	Complete Aluminium frame	P
8.4	Routine maintenance of the module does not involve breaking or disturbing the bonding path.	-	P
	A bolt, screw, or other part used for bonding purposes is not intended for securing the complete device.	Separate holes for grounding and mounting provided	P



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
8.5	Bonding is by a positive means, such as clamping, riveting, bolted or screwed connections, or welding, soldering or brazing.	-	P
	The bonding connection penetrates all nonconductive coatings, such as paint, anodised coatings or vitreous enamel.	-	P
8.6	All joints in the bonding path are mechanically secure.	Frame and corner pieces are crimped together	P
8.7	If the bonding connection depends upon screw threads, two or more screws or two full threads of a single screw engage the metal.	-	P
8.8	The diameter of the grounding screw or bolt is sized appropriately to the gauge of the bonding conductor, as per Table 2 of IS/IEC 61730-1.	See Annex 1 for constructional details	P
8.9	Ferrous metal parts in the grounding path are protected against corrosion by metallic or non-metallic coatings.	No ferrous material used	P
8.10	The module has metal-to-metal multiple-bearing pin-type hinges. These are considered to be an acceptable means for bonding.	-	N/A
8.11	A wiring terminal or bonding location is identified with the appropriate symbol (IEC 60417-5019) or has a green-coloured part.	-	N/A
	No other terminal or location is identified in this manner.	-	N/A
8.12	If a marking is used to identify an equipment grounding terminal, it is located on or adjacent to the terminal, or on a wiring diagram affixed to the module or panel near the terminal.	-	N/A
Supplementary information: N/A			

9	Creepage and clearance distances		
9.1	Creepage and clearance distances between uninsulated live parts not of the same potential and between a live part and an accessible metal part, are not less than the values specified in Tables 3 and 4 of IS/IEC 61730-1.	Creepage of minimum 11 mm is required for a system voltage of 1500 vdc	P
	Minimum measured creepage and clearance distances between field wiring terminals (mm)	N/A	-
	Minimum measured clearance distances between internal current carrying parts and accessible points (mm).....	Minimum measured clearance:13.2 mm	P



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
9.2	Creepage and clearance distances at field wiring terminals have been judged on module open-circuit voltage (Voc):	-	P
	If additional unmarked terminals exist in the terminal block, or if wiring terminals are marked specifically for grounding, the creepage and clearance distances have been judged on the basis of the maximum system operating voltage.	-	P
9.3	The spacings at a field-wiring terminal have been measured with and without wire connected to the terminal.	-	P
	If the terminal will properly accommodate it, and if the product was not marked to restrict its use, the wire is one size larger than that required, otherwise, the wire is of the required size.	-	P
9.4	Surfaces separated by a gap of 0.4 mm or less have been considered to be in contact with each other.	-	P
Supplementary information: N/A			

10	Field Wiring Compartments With Covers		---
10.1	General		---
	If the module is designed for the application of a permanently attached wiring system by an installer in the field, it is to be provided with an enclosed wiring compartment.	-	N/A
10.2	Wall thickness		---
	If the wiring compartment is intended for the attachment of a field-applied permanent wiring system, the minimum wall thickness for the material complies with Table 5 of IS/IEC 61730-1.	See Annex 1 for constructional details	N/A
10.3	Internal volume		---
	The internal volume for each intended conductor complies with the requirements of Table 6 of IS/IEC 61730-1.	See Annex 1 for constructional details	N/A
	In the space comprising the minimum required volume, no enclosure dimension is less than 20 mm.		N/A
10.4	Openings		
	All openings are provided with appropriate coverings, whose functions comply with the requirements of:		—
	Subclause 5.2.1 of IS/IEC 61730-1		N/A




IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	Wet leakage Current test of Subclause 10.20 of IS 16077:2013/IEC 61646:2008 or 10.17 of IS 14286 (2010).	Refer IS 14286 10.17 test result	P
	Accessibility test MST 11 of IS/IEC 61730-2	Refer IS/IEC 61730-2 MST 11 test result	P
	Coverings can only be removed by the use of a tool		P
10.5	Gaskets and seals		---
	Gaskets and seals do not deteriorate beyond limits during accelerated ageing, and are not used where they may be subject to flexing during normal operation.		N/A
10.6	Strain relief		---
	Any strain relief is provided so that stress on a lead intended for field connection, or otherwise likely to be handled in the field, including a flexible cord, is not transmitted to the electrical connection inside the module. <i>Note: Mechanical securement means which comply with Subclause 10.14 (Robustness of Terminations Test) of IS 14286 (2010) meet this requirement.</i>	Refer IS/IEC 61730-2 MST 42 test result	P
10.7	Sharp edges		---
10.7.1	The enclosure is smooth and free from sharp edges, burrs, or the like that may damage insulation or conductors.		P
10.7.2	The inner edges of conduit openings and knockouts are smooth and free from sharp edges, burrs, or the like that may damage insulation or conductors.		N/A
10.8	Conduit applications - Metallic		----
10.8.1	Any threaded hole in a metal wiring compartment intended for the connection of rigid metal conduit is reinforced to provide metal not less than 6,4 mm thick.		N/A
	Any threaded hole is tapered unless a conduit end stop is provided.		N/A
10.8.2	If threads for the connection of conduit are tapped all the way through a hole in a compartment wall, there are not less than 3.5 nor more than 5 threads in the metal and the construction. was such that a conduit bushing can be attached as intended.		N/A
	The construction is such that a conduit bushing can be attached as intended.		N/A



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
10.8.3	If threads for the connection of conduit are not tapped all the way through a hole in a compartment wall, there are not less than 5 full threads in the metal. and there was a smooth, rounded inlet hole for the conductors.		N/A
	There are smooth, rounded inlet holes for the conductors.		N/A
10.8.4	For a non-threaded opening in a metal wiring compartment intended to accommodate rigid metallic conduit, a flat surface of sufficient area is provided around the opening to accept the bearing surfaces of the bushing and lock washer.		N/A
10.8.5	Conduit complies with the Conduit bending test MST 33 of IS/IEC 61730-2.		N/A
10.9	Conduit applications - Non-metallic		---
10.9.1	The thickness of sides, end walls, and bottom of a non-metallic wiring enclosure specified for conduit applications is not less than the values specified in Table 7 of IS/IEC 61730-1.		N/A
10.9.2	A non-metallic wiring compartment intended to accommodate non-metallic conduit fulfils the following requirements:		—
	a) It has one or more unthreaded conduit-connection sockets;		N/A
	b) It has one or more threaded or unthreaded openings for a conduit-connection socket, or one or more knockouts that comply with the requirements of Knockout Test MST 44 of IS/IEC 61730-2;		N/A
	c) It complies with the Conduit Bending Test MST 33 of IS/IEC 61730-2, if intended for rigid non-metallic conduit.		N/A
10.9.3	Sockets for the connection of non-metallic conduit provide a positive end stop for the conduit.		N/A
	The socket diameters, the throat diameter at the entrance to the box, the socket depths, and the wall thickness of the socket are within the limits specified in the applicable conduit system.		N/A
10.9.4	A knockout or opening in a non-metallic wiring compartment intended to accommodate rigid non-metallic conduit complies with the dimensional requirements of the applicable conduit system.		N/A
Supplementary information: N/A			



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
11	Marking		P
11.1	The module includes the following clear and indelible markings:		—
	Name, monogram or symbol of manufacturer	VISAKA INDUSTRIES LIMITED (ATUM DIVISION) 	P
	Type or model number	VIL-375M Provided in inside laminate in front side of the module and on backside marking plate	P
	Serial number	VIL120212961017 Provided in inside laminate in front side of the module marking plate.	P
	Polarity of terminals or leads	"+" and "-" provided on connector & Junction Box	P
	Maximum system voltage	1500V	P
	Safety class (IEC 61140)	Provided	P
	The date and place of manufacture are marked on the module or are traceable from the serial number.	Provided. The Date of manufacturing are traceable through serial number provided in inside laminate marking plate. VIL120212961017 VIL1-VISAKA INDUSTRIES LTD (ATUM DIVISION) Line 1 2021-Year of Manufacture 29-Week of the Year 6-Day of the Week Place and year of manufacturing is mentioned in inside laminate marking plate and also in back label.	P
11.2	The following additional markings are applied to either the module or placed into the instruction and installation data (required documents).		P
	Voltage at open circuit	Provided	P
	Current at short-circuit	Provided	P
	Maximum over-current protection rating, as verified by the Reverse Current Overload Test MST 26 of IS/IEC 61730-2	Provided	P



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	Recommended maximum series/parallel module configurations	see installation manual	P
	Application class	"A" provided	P
	All electrical data are given relative to Standard Test Conditions (1000 W/m ² @ 25 °C)	Provided	P
11.3	Connectors suitable only for field assembly of modules are marked "Do not disconnect under load".	Provided	P
11.4	For modules with open-circuit voltage in excess of 50 V, and/or modules rated for maximum system voltage in excess of 50 V, a highly visible warning label regarding the shock hazard is applied near the means of connection to the module.	Max. open circuit voltage 49.39 V @ STC	P
Supplementary information: N/A			

12	Requirements for supplied documents		---
12.1	The module or panel is supplied with installation instructions describing the methods of electrical and mechanical installation and the electrical ratings of the module.	Provided	P
	The instructions state the application class under which the module was qualified, and any specific limitations required for that application class.	Provided	P
12.2	When the fire rating is dependent on a specific mounting structure, specific spacing, or specific means of attachment to the roof or structure, details of the specific parameter or parameters are included in the instructions.	Provided	P
12.3	The electrical installation instructions include a detailed description of the wiring method.	Provided	P
	The description of the wiring method includes the following information:		—
	Grounding method	Provided	P
	Size, type, and temperature rating of the conductors	Provided	P
	Recommended maximum series/parallel module configurations	Provided	P
	Type of over-current protection and diode bypassing to be used	Fuse rating 14 A provided, Diode - 30SQ 045T provided with the module	P
	Minimum cable diameters when the wiring method is cable	Cable - 62930 IEC 131 provided with the module	N/A



IS/IEC 61730-1:2004 (First Edition) + A1:2017+A2:2017			
Clause	Requirement + Test	Result - Remark	Verdict
	Any limitations on wiring methods that apply to the wiring compartment or box	Cables are not interchangeable	N/A
12.4	The mechanical installation instructions for roof mounting include:		—
	A statement indicating the minimum mechanical means for securing the module or panel to the roof	Provided	---
	A statement that the assembly is to be mounted over a fire resistant roof covering rated for the application (only for non-integral modules or panels)	provided	P
	Indication of any slope required for maintaining a fire class rating	No Slope Required	P
12.5	The installation instructions include a statement advising that artificially concentrated sunlight shall not be directed on the module or panel.	Provided	P
12.6	Assembly instructions are provided with a product shipped in subassemblies and are detailed and adequate to the degree required to facilitate total assembly of the product.	No subassemblies	N/A
12.7	The installation instructions include the proposed statement given in this Subclause (or equivalent) to allow for increased output of the module resulting from certain conditions of use.	Provided	P
Supplementary information: N/A			



ANNEX 1: CONSTRUCTIONAL DETAILS

A1.1	MODULE TYPE/S	
	Representative Model: VIL-375M Series Model: VIL-370M	
A1.2	MODULE DESIGN –DIMENSIONS	
	Module dimensions (L x W x H) [mm]:	1981x991x35

A1.3	SOLAR CELL	
	Cell type reference	Mono-crystalline PERC Manufactured by: ADANI SOLAR CELLS (Mundra Solar Pvt Ltd) Type: MSPVLM2M5
	Cell dimensions L x W (± %) [mm]:	156.75 mm x 156.75 mm ± 0.25 mm
	Cell thickness [µm]:	190 µm ± 30 µm
	Cell area [cm ²]:	245.70

A1.4	IDENTIFICATION OF MATERIALS	
	Front cover	Manufactured by: Borosil Renewables Limited, Type: AR Coated (Low-iron) Textured Tempered Solar Glass. Thickness: 3.2mm
	Rear cover	Manufactured by: Renewsys India Private Limited, Type: Preserv 1 300 WD, Thickness: 0.395mm, Color: WT, RTI: 140, Flame Spread Index: 30, Partial Discharge: 4.17kV
	Encapsulation material.....	Manufactured by: Renewsys India Private Limited, Type: CONSERV P 360-14FC, Thickness: 0.45- 0.5mm, HWI=4, HAI=0, RTI:50, Color : NC
	Frame parts.....	Manufactured by: Saty Satya Surya Aluminium Industries Ltd. Type 6063–T6
	Mounting parts	Modules must be mounted using the mounting holes located on the rear side of the long frame parts using M8 stainless steel bolts, nuts, and washers
	Adhesive for frame	Manufactured by: Sika India Pvt Ltd, Type: Sikasil AS 60 IN, Thickness: 1.5 mm min, Flame Class: HB, HWI: 3, HAI:0, RTI:105, color: WT
	Cell connector	Manufactured by: NEOCAB-PV, AB Industries Type: Cross section: 0.9X0.20 mm, Material: Base Cu ≥ 99.95%, Coating Sn60%Pb40%,
	String connector.....	Manufactured by: NEOCAB-PV, AB Industries Type: Cross section: 0.3X5.0 mm, Material: Base Cu ≥ 99.95%,Coating Sn60%Pb40%,
	Soldering material	Manufactured by: Kester Type, 245 Flux cored wire Kester
	Fluxing agent	Manufactured by: KESTER, Type: 952S



Junction box	Manufactured by: Ningbo GZX Photovoltaic Technology Co., Ltd, Type: PV-GZX156V, 1500Vdc, 14A, Reverse Current 30A, -40°C to 85°C, IP65/68.
Cable	Manufactured by: Ningbo GZX Photovoltaic Technology Co., Ltd, Type: 62930 IEC 131, 1500Vdc, -40°C to 90°C, 120°C
Connector	Manufactured by: Ningbo GZX Photovoltaic Technology Co., Ltd Type: PV- GZX 1500, 1500VDC, 30A, IP68.
Bypass diode	Manufactured by: Ningbo GZX Photovoltaic Technology Co. Ltd Type: 30SQ 045T, 45V, 30A
Potting material	Manufactured by: Shanghai Huitian new material Co., Ltd Type: 5299W-S, Thickness: 3.0 mm min, Flame Class: V-0, HWI: 1, HAI:0, RTI:105, IPT:2.5kV color: WT
Adhesive for junction box	Manufactured by: Sika India Pvt Ltd, Type: Sikasil AS 60 IN, Thickness: 1.5 mm min, Flame Class: HB, HWI: 3, HAI:0, RTI:105, color: WT
Additional material (e. g. fixing tape, insulation tape).....	Aluminium corner Key: Manufactured by: Satya Surya Aluminium Industries Ltd., Type D-6606, Back Label: Speckgrap India Pvt. Ltd, Type: 2M MAT CH PET TC/S-730 Internal Label: Speckgrap India Pvt. Ltd. Type: PET WHITE TC 50 -RC18.

A1.5		MODULE DESIGN - MINIMUM DISTANCES	
Between cells (mm)		2.14	
Between cell and edge of laminate (mm)		13.2	
Between any current carrying part and edge of laminate (mm).....		18.95	

A1.6		MODULE DESIGN - ELECTRICAL CONFIGURATION	
Total number of cells .:	72		
Serial-parallel connection of cells	All cells are in series connection		
Cells per bypass diode:	24		
No. of bypass diodes .:	03		



Annex 2: List of measurement equipment

Description	Identification	Application
Measuring Tool, Caliper, Digital or Analog	69881	Creepage Measuring
Magnifying Lens, Without Ruler	76645	Creepage Measuring
Datalogger, RH & Temperature	68611	Creepage Measuring
Meter and/or Sensor, Light	180089	Visual Inspection
Fixture, For Testing, Table	160912	Visual Inspection
Magnifying Lens, Without Ruler	76645	Visual Inspection



Annex 3: Enclosures

Type	Supplement ID	Description
Figure	1-01	Front view of PV Module (VIL-375M)
Figure	1-02	Rear view of PV Module (VIL-375M)
Figure	1-03	PV Module Junction Box – Close and open view Manufactured by: Ningbo GZX Photovoltaic Technology Co., Ltd, Type: PV-GZX156V, 1500Vdc, 14A, Reverse Current 30A, -40°C to 85°C, IP65/68.
Figure	1-04	PV Module Connectors (Male & Female) Manufactured by: Ningbo GZX Photovoltaic Technology Co., Ltd Type: PV- GZX 1500, 1500VDC, 30A, IP68.
Illustration	2-01	Cell Datasheet Mono-crystalline PERC Manufactured by: ADANI SOLAR Type: MSPVLM2M5
Illustration	2-02	Diode Datasheet: Manufactured by: Ningbo GZX Photovoltaic Technology Co. Ltd Type: 30SQ 045T, 45V, 30A
Illustration	2-03	Frame Diagram for 72 cell - (VIL-375M)
Report/ Certificate	3-01	Junction Box: Manufactured by: Ningbo GZX Photovoltaic Technology Co., Ltd, Type: PV-GZX156V, 1500Vdc, 14A, Reverse Current 30A, -40°C to 85°C, IP65/68.
Report/ Certificate	3-02	Cables: Manufactured by: Ningbo GZX Photovoltaic Technology Co., Ltd, Type: 62930 IEC 131, 1500Vdc, -40°C to 90°C, 120°C
Report/ Certificate	3-03	Connectors: Manufactured by: Ningbo GZX Photovoltaic Technology Co., Ltd Type: PV- GZX 1500, 1500VDC, 30A, IP68.
Report/ Certificate	3-04	Sealant: Manufactured by: Sika India Pvt Ltd, Type: Sikasil AS 60 IN, Thickness: 1.5 mm min, Flame Class: HB, HWI: 3, HAI:0, RTI:105, color: WT
Report/ Certificate	3-05	Potting material: Manufactured by: Shanghai Huitian new material Co., Ltd Type: 5299W-S, Thickness: 3.0 mm min, Flame Class: V-0, HWI: 1, HAI:0, RTI:105, color: WT
Report/ Certificate	3-06	EVA: Manufactured by: Renewsys India Private Limited, Type: CONSERV P 360-14FC, Thickness: 0.45- 0.5mm, HWI=4, HAI=0, RTI:50, Color : NC
Report/ Certificate	3-07	Back sheet: Manufactured by: Renewsys India Private Limited, Type: Preserv 1 300 WD, Thickness: 0.395mm, Color: WT, RTI: 140, Flame Spread Index: 30, Partial Discharge: 4.17kV



Manual	4-01	Installation Manual
--------	------	---------------------

Figure – 1-01





Figure – 1-02



Figure – 1-03



Figure – 1-04



Illustration – 1-01 Mono Crystalline



Mono-crystalline PERC Solar Cell

MSPVLM2M5 19.00-22.50



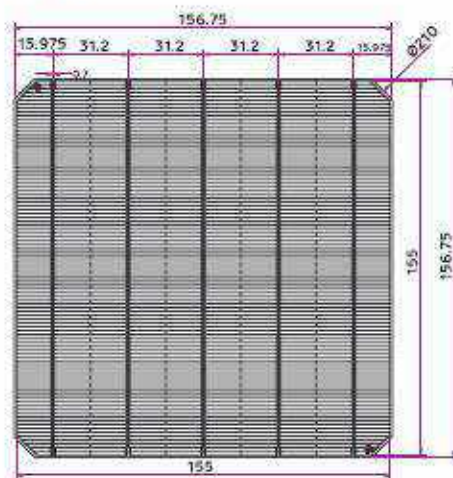
Features

- High-efficiency solar cells with an anisotropically etched surface
- Silicon nitride anti-reflection coating
- Silver front contact bars and dashed surface aluminium back contact field
- Perfect appearance and color uniformity

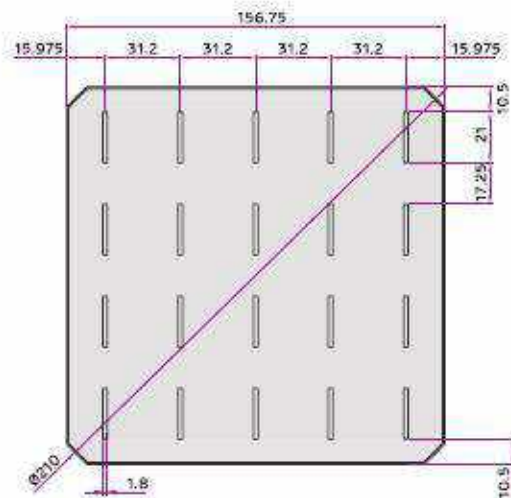
Performance and Quality

- Proper handling from incoming inspection through production, outgoing inspection and packaging
- 100% checked for reverse current and visual appearance
- Calibrated against Fraunhofer ISE
- RoHS compliance
- 100% PID resistance
- LID regenerated solar cells to minimize LID loss
- ISO 9001, ISO 14001 and OHSAS 18001 certified by TUV NORD
- Soldering peel strength ≥ 1.0 N/mm Bus Bar width
- Only positive power tolerance binning

Cell layout (Dimensions in mm)



Front Side



Back Side



www.adanisolar.com

Technical Data

Electric Performance

Class	Efficiency Range (%)	Rated Power (Wp)	*Maximum Power Current (A)	*Short Circuit Current (A)	*Maximum Power Voltage (V)	*Open Circuit Voltage (V)
A-195	19.5-19.6	4.76	8.956	9.557	0.532	0.640
A-196	19.6-19.7	4.79	8.985	9.558	0.533	0.641
A-197	19.7-19.8	4.81	8.998	9.566	0.535	0.642
A-198	19.8-19.9	4.84	9.013	9.570	0.537	0.643
A-199	19.9-20.0	4.86	9.024	9.574	0.539	0.644
A-200	20.0-20.1	4.89	9.038	9.575	0.541	0.645
A-201	20.1-20.2	4.91	9.045	9.578	0.543	0.646
A-202	20.2-20.3	4.94	9.052	9.583	0.546	0.647
A-203	20.3-20.4	4.96	9.058	9.586	0.548	0.648
A-204	20.4-20.5	4.98	9.063	9.589	0.550	0.649
A-205	20.5-20.6	5.01	9.072	9.593	0.552	0.650
A-206	20.6-20.7	5.03	9.082	9.596	0.554	0.651
A-207	20.7-20.8	5.06	9.094	9.600	0.556	0.652
A-208	20.8-20.9	5.08	9.112	9.603	0.558	0.653
A-209	20.9-21.0	5.11	9.121	9.606	0.560	0.654
A-210	21.0-21.1	5.13	9.129	9.610	0.562	0.655
A-211	21.1-21.2	5.16	9.142	9.614	0.564	0.656
A-212	21.2-21.3	5.18	9.148	9.617	0.567	0.657
A-213	21.3-21.4	5.20	9.153	9.620	0.569	0.658
A-214	21.4-21.5	5.23	9.167	9.624	0.571	0.659
A-215	21.5-21.6	5.25	9.176	9.627	0.572	0.660

Test condition: 1000 W/m², AM 1.5, 25°C. Power measuring tolerance: ±1.5% rel

Physical Characteristics

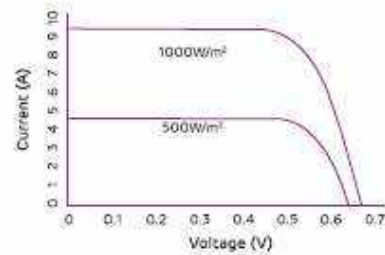
Dimension	156.75 mm x 156.75 mm ± 0.25 mm
Diagonal	210 mm ± 0.5 mm
Thickness (±)	19.0 μm ± 30 μm
Front Side (-)	Silicon nitride anti-reflection coating 0.7 mm silver Bus Bar
Back Side (-)	Passivated Emitter(SiON and SiNx dual layer) Rear Contact 1.8 mm (silver) discontinuous soldering pads

Temperature Coefficients

Current Temperature Coefficient	0.03 %/K
Voltage Temperature Coefficient	-0.35 %/K
Power Temperature Coefficient	-0.41 %/K

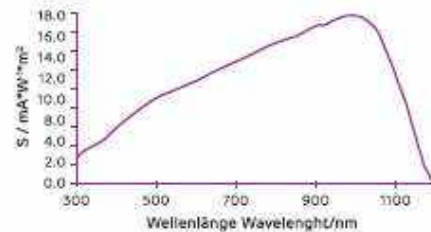
Light Intensity Dependence

Intensity(W/m ²)	V _{mpp} (%)	I _{mp} (%)
1000	100.0	100.0
900	99.8	90.00
500	98.4	50.00
300	96.2	30.00
200	94.1	20.00



Packaging

Minimize the risk of broken cells with special design
Label with product information



Note:

The specifications included in this datasheet are subject to change without notice. Adani Solar reserves the right for the final interpretation of all figures reported in this document.

Adani Solar is the brand name for legal entity Mumbai Solar PV Ltd. having its registered office at *Adani Corporate House, Shantaprim, S. D. Highway, Ahmedabad-382 401, Gujarat, India* and manufacturing units at *Revenue Survey No. 18 GP, City: Kutch Taluka: Mundra, Village: Tunda, Post office: Bidadi, Pin: 370595*.

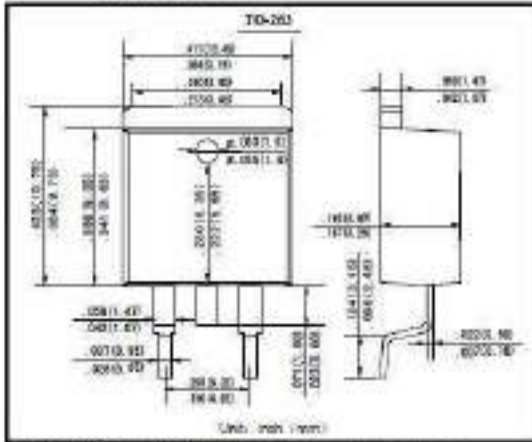
Illustration 2-02



肖特基二极管
反向电压 45V
正向电流 30A

30SQ045T

Schottky Barrier Rectifier
Reverse Voltage 45 V
Forward Current 30 A



特征 Features

- 大电流承受能力, High Current Capability
- 正向压降低, Low Forward Voltage Drop
- 低功耗高效率, Low Power Loss, High Efficiency

机械数据 Mechanical Data

- 封装: 塑料封装 Case: Molded Plastic
- 标识: 标记模压或印于本体 Polarity: Symbols molded or marked on body
- 安装位置: 任意 Mounting Position: Any
- 重量: 2.00克 Weight: 2.00Grams

极限值和温度特性 TA = 25°C 除非另有规定。

Maximum Ratings & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

	符号 Symbols	30SQ 045T	单位 Unit
最大可重复峰值反向电压 Maximum repetitive peak reverse voltage	V_{RRM}	45	V
最大均方根电压 Maximum RMS voltage	V_{RMS}	31.5	V
最大直流阻断电压 Maximum DC blocking voltage	V_{DC}	45	V
最大正向平均整流电流 Maximum average forward rectified current	I_{FAV}	30	A
峰值正向浪涌电流 8.3ms 单-正弦半波 Peak forward surge current 8.3ms single half sine-wave	I_{FSM}	250	A
典型热阻 Typical thermal resistance	$R_{\theta JC}$	1.5	$^{\circ}C/W$
工作结温和存储温度 Operating junction and storage temperature range	T_J, T_{STG}	-55 — +200	$^{\circ}C$

电特性 TA = 25°C 除非另有规定。

Electrical Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

	符号 Symbols	30SQ 045T	单位 Unit
最大正向电压 $I_F = 30A$ Maximum forward voltage	V_F	0.63	V
最大反向电流 TA=25°C TA=100°C Maximum reverse current	I_R	0.1 -15	mA
典型结电容 $V_R = 4.0V, f = 1MHz$ Type junction capacitance	C_J	400	pF

备注: 芯片尺寸: 158mil
NOTE: The chip size is 159mil.



30SQ045T

特性曲线 Characteristic Curves

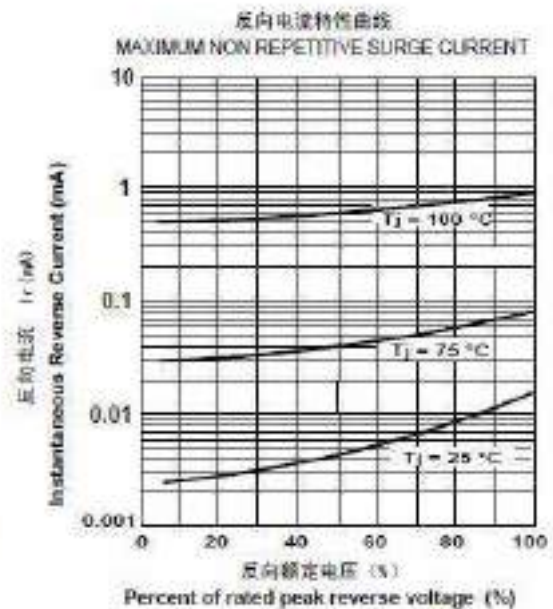
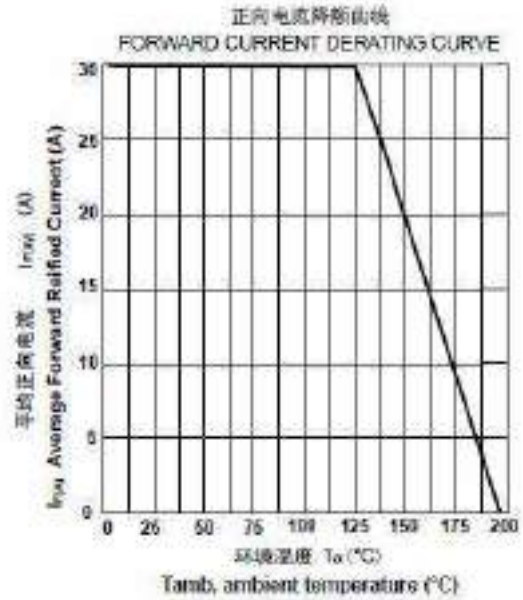
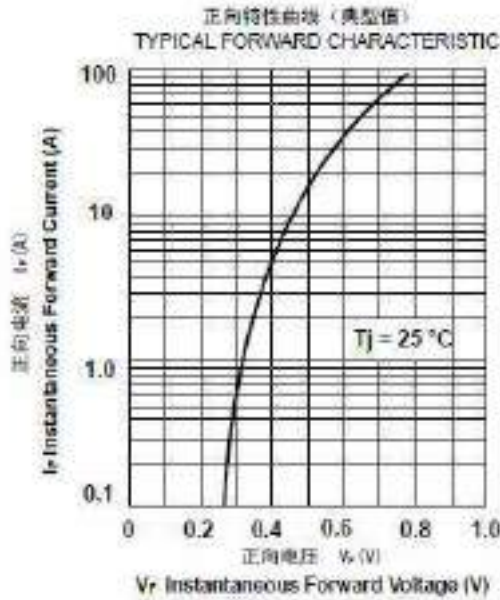
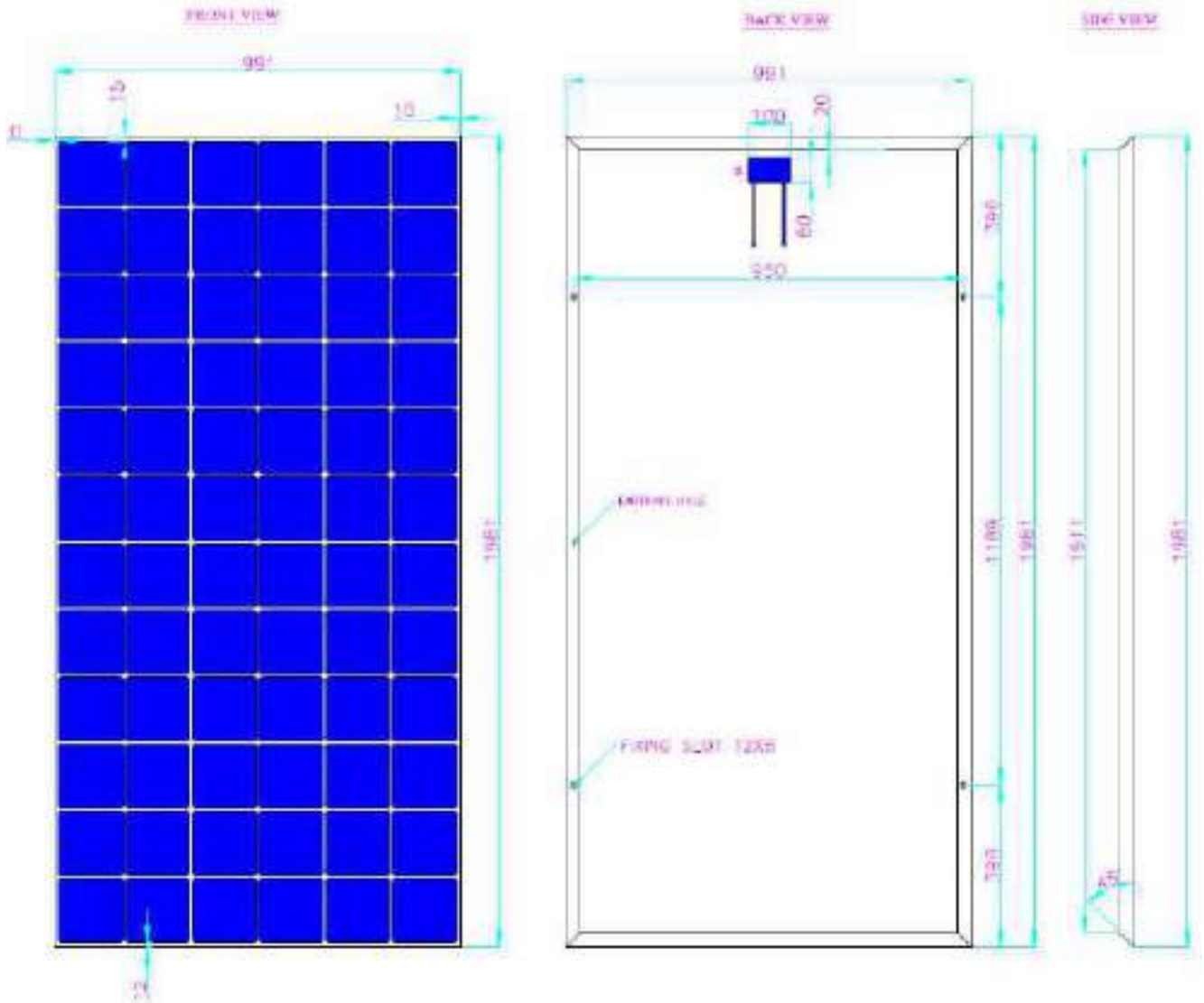
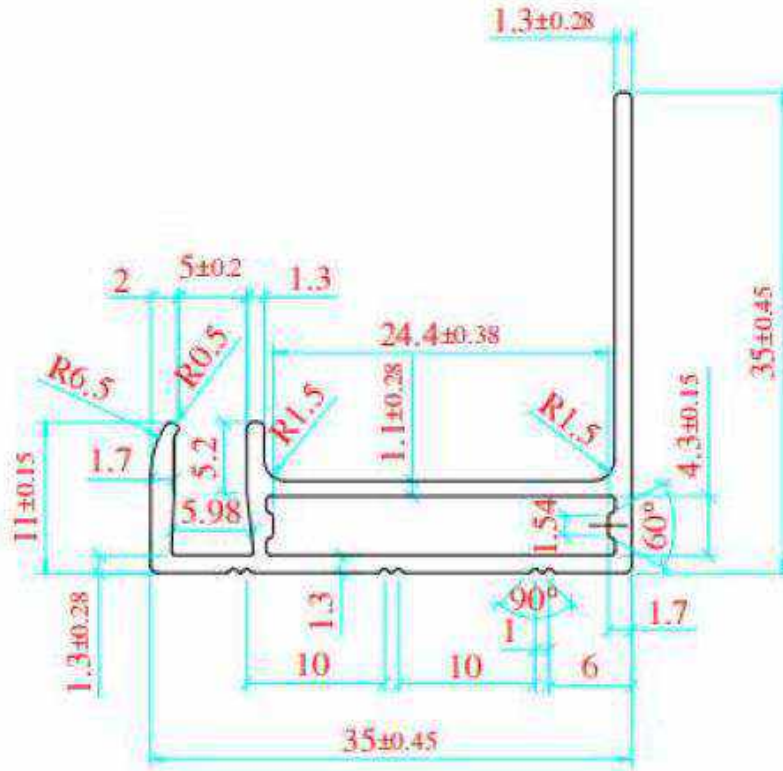



Illustration 2-03





Scale = 1:1



CUSTOMER MA GMKT		CUSTOMER REF. DDR No: AC030/20-21 DRG No: PDF DRG			UNSP.TOLERNACES AS PER IS:6477			PREL DRG No. P6007		
CUT LENGTH 3660 ±8 mm		FLATNESS ± 0.64 mm		STRAIGHTNESS 1.70 mm/M		TWIST 1.70 mm/M		ANGULARITY ± 2°		
AREA Sq.mm 143	WT/MTR.KG 0.386	PERIMETER. mm Out:167,In 59	CCD.mm 49	ALLOY/TEMPER 6063 T6	DRN	CHKD	APPD	DATE 06-09-20	SCALE 1:1	
 SATYA SURYA Aluminium Industries Ltd Shed No. 17, Phase-1, IDA, Cherlapally Hyderabad - 500 051. Ph: 040 - 2726 7944, Fax: 2726 1928 E-mail: info@satyasurya.net Website: www.satyasurya.net					Works: Sy. No: 40, 48, 49 Panulaparathi road, Gowraram - 502 279 Wargal Mandal, Medak District. Email: mailadi@satyasurya.net		Section No.		REV.	AMD. No
					1488 D-6821		1			



Reports/ certificates 3-01



ZERTIFIKAT ◆ CERTIFICATE ◆ 認 證 證 書 ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

No. B 088393 0014 Rev. 01

Holder of Certificate: NINGBO GZX PV TECHNOLOGY CO., LTD
No. 28, Binhai 5th, Road
Hangzhou Bay New District
315336 Ningbo, Zhejiang
PEOPLE'S REPUBLIC OF CHINA

Production Facility(ies): 088393
Certification Mark:



Product: Installation box
Junction Box for PV Module
Model(s): PV-GZX156Q, PV-GZX156Q1, PV-GZX156V,
PV-GZX156V1, PV-GZX156H.

Parameters:
Rated Voltage: 1500VDC
Rated Current: 14 A for PV-GZX156V
15 A for PV-GZX156Q and PV-GZX156H
16 A for PV-GZX156Q1 and PV-GZX156V1
Reverse Current: 30A
Application Class: A
Protection Class: II
Degree of Protection: IP55/IP68(1m,1h) for PV-GZX156Q
PV-GZX156Q1, PV-GZX156V
PV-GZX156V1;
IP65/IP67 for PV-GZX156H
Ambient Temperature: -40°C ~ +85°C

Tested according to: IEC 62790(ed.1)
EN 62790:2015

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition, the certification holder must not transfer the certificate to third parties. This certificate is valid until the listed date, unless it is cancelled earlier. All applicable requirements of the testing and certification regulations of TÜV SÜD Group have to be complied. For details see: www.tuvsud.com/cps-cert

Test report no.: 704071614002-03
Valid until: 2025-08-06
Date, 2020-08-10

(Yaqun Alex Liu)





Reports/certificates 3-02



ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

No. B 088393 0020 Rev. 00

Holder of Certificate: NINGBO GZX PV TECHNOLOGY CO., LTD
No. 28, Binhai 5th, Road
Hangzhou Bay New District
315336 Ningbo, Zhejiang
PEOPLE'S REPUBLIC OF CHINA

Production Facility(ies): 107732
Certification Mark:



Product: Electric Cables
Electric cables for photovoltaic systems with a voltage rating of 1,5kV DC

Model(s): 62930 IEC 131 1×1.5mm², 1×2.5mm², 1×4mm²,
1×6mm², 1×10mm², 1×16mm², 1×25mm²

Parameters:
Rated Voltage: DC 1500V (between conductors and between conductor and earth)
Application Class: A
Protection Class: II
Ambient Temperature: -40°C ~+90°C
Max. Temperature at conductor: 120°C

Tested according to: IEC 62930(ed.1)

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition, the certification holder must not transfer the certificate to third parties. This certificate is valid until the listed date, unless it is cancelled earlier. All applicable requirements of the testing and certification regulations of TUV SUD Group have to be complied. For details see: www.tuvsud.com/ps-cert

Test report no.: 704072015801-00

Valid until: 2025-07-05
Date: 2020-07-06

(Yaqun Alex Liu)





Reports/certificates 3-04

Component - Plastics

E504802

Guide Information

Sika India Pvt. Ltd.

B 501 & 502, Lotus Corporate Park, Off. Western Express Highway, Goregaon East, TTC Industrial Area, Tathhe-Indranagar, Mumbai Maharashtra 400063 IN

Sikasil AS 60 IN

Silicone "Room Temperature Vulcanizing" (RTV), furnished as two paste components

Color	Min. Thk (mm)	Flame Class	HVI	HA	RII Elec	RII Imp	RII Str
WT	1.5	HB	3	0	105	105	105
	3.0	HB	2	0	105	105	105

Comparative Tracking Index (CTI) -

Dielectric Strength (kV/mm) : 22

High-Voltage Arc Tracking Rate (HMTR) : 0

Dimensional Stability (%) :-

Inclined Plane Tracking (IPT) kV -

Volume Resistivity (10¹² ohm-cm) :-

High Volt, Low Current Arc Resis (D495) :-

ANSUL SR semi-scale test data does not pertain to building materials, furnishings and related occupants. ANSUL SR semi-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2019-03-29

Last Revised: 2019-03-29

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IEC and ISO Test Methods

Test Name	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	1.5	HB75 (WT)
			3.0	HB40 (WT)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	°C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	°C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	°C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	°C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 6256	kJ/m ²	-	-
ISO Izod Impact	ISO 180	kJ/m ²	-	-
ISO Charpy Impact	ISO 179-2	kJ/m ²	-	-



Reports/certificates 3-05

iq.ul.com

PROSPECTOR

View additional material information including performance and processing data

CLICK TO CONTINUE

The information presented on the UL Prospector document was received by UL Prospector from the producer of the material. UL Prospector makes substantial efforts to assure the accuracy of this data. However, UL Prospector assumes no responsibility for the data values and strongly encourages that upon final material selection, data points are validated with the material supplier.

Component - Plastics

E249811

Grade Information

Shanghai Huitian New Material Co Ltd

291 Wanji Rd, Songjiang, Shanghai 201616 CN

5200W-S

Silicone "Room Temperature Vulcanizing" (RTV), furnished as two liquid components

Color	Min. Thick (mm)	Flame Class	HVI	HAI	RT Elec	RT Ins	RT Str
WT, BK	3.0	V-0	1	0	105	105	105
	6.0	V-0	0	0	105	105	105
	13.0	V-0	0	0	105	105	105

Comparative Tracking Index (CTI): 0

Dielectric Strength (kV/mm): -

High Voltage Arc Tracking Rate (HVTR): -

Dimensional Change (%): -

Inclined Plane Tracking (IPT) kV: 2.5

Volume Resistivity (10⁸ ohm-cm): -

Surface Resistivity (10⁸ ohms/square): -

High Volt, Low Current Arc Resis (D495): -

All IEC/UL 94 small scale test data does not pertain to building materials, furnishings and related products. All IEC/UL 94 small scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and assemblies, where the acceptability of the combination is determined by IEC/UL.

Report Date: 2012-05-16

Last Revised: 2015-11-11

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IEC and ISO Test Methods

Test Name	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	3.0	V-0 (WT, BK)
			6.0	V-0 (WT, BK)
			13.0	V-0 (WT, BK)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	°C	-	-
Glow-Wire Ignition (GWI)	IEC 60695-2-13	°C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Bull Pressure	IEC 60695-10-2	°C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	°C	-	-
ISO Tensile Strength	ISO 627-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 6258	kJ/m ²	-	-
ISO Izod Impact	ISO 180	kJ/m ²	-	-
ISO Charpy Impact	ISO 179-1	kJ/m ²	-	-



Reports/certificates 3-06

10/21/21, 1:14 PM

UL Certification: E358124 - Photovoltaic Polymeric Materials

ul.com

Photovoltaic Polymeric Materials

E358124

Guide Information

RENEWSYS INDIA PRIVATE LIMITED

Plot No 21, 22 & 23, Bommasandra - Jigani Link Road, Industrial Area, Taluk Anekal, Bangalore Karnataka 562105 IN

CONSERV P 360-14FC

Ethylene Vinyl Acetate (EMAC), uncured, furnished as sheets

Color	Min. Thk. (mm)	Flame Class	ULW	ULH	ULF	ULI	ULS
NC	0.45-0.5	-	4	0	50	50	50

Comparative Tracking Index (CTI): 0

Dielectric Strength (kV/mm): -

High Voltage Arc Tracking Rate (HVTR): -

Dimensional Change (%): -

Inclined Plane Tracking (IPT) (V): -

Volume Resistivity (10¹² ohm-cm): -

High Volt, Low Current Arc Resis (D465): -

NOTE: UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, when the acceptability of the combination is determined by UL.

Report Date: 2014-09-12

Last Revised: 2014-09-12

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IEC and ISO Test Methods		Units	Thk (mm)	Value
Test Name	Test Method			
Flammability	IEC 60695-11-10	Class (color)	-	-
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	°C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	°C	-	-
IEC Particle Discharge	IEC 61730-2, MST 14	Max system voltage (V)	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	°C	-	-
ISO Heat Deflection (1.00 MPa)	ISO 75-2	°C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8255	kJ/m ²	-	-
ISO Izod Impact	ISO 180	kJ/m ²	-	-
ISO Charpy Impact	ISO 179-1	kJ/m ²	-	-



Reports/Certificate 3-07



Letter Report

2018-10-19

Mr. Ashish Kumar Singh
RENEWSYS INDIA PRIVATE LIMITED
Plot No 21, 22 & 23
Bommasandra - Jigani Link Road, Taluk Anekal
Bangalore , Karnataka 562105, India

Reference: Project 4788556277.1.1
Subject: Partial Discharge test of grade PREVERV 1-300WD

Mr. Ashish Kumar Singh

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

For the subject project, we have completed the testing at UL India lab . The summary is as follows.

Grade name	Test	Results
PREVERV 1-300WD	Partial Discharge test IEC 61730-2: Ed-1	Measured Extinction voltage (Mean)- 4.17kV

Disclaimer

*The results of testing in this report apply only to the sample product/item, which was tested. UL Lab has not participated in the sample selection. This Test report shall not be reproduced except in full without the written approval of the UL Lab. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. *The applicable standard ambient condition supersedes the lab general ambient conditions.*

UL LLC did not select or witness the production of the submitted test samples, determine whether the samples were representative of production samples, nor was UL provided with information relative to the formulation or identification of component materials used in the test samples. The test results apply only to the actual samples tested.

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Letter Report

2018-09-21

Mr. Ashish Kumar Singh
RENEWSYS INDIA PRIVATE LIMITED
Plot No 21, 22 & 23
Bommasandra - Jigani Link Road, Taluk Anekal
Bangalore , Karnataka 562105, India

Reference: Project 4788556277.1.1
Subject: Radiant Panel test of grade PRESERV 1 300 WD

Mr. Ashish Kumar Singh

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

For the subject project, we have completed the testing at UL Northbrook . The summary is as follows.

Grade name	Test	Results
PRESERV 1 300 WD (on Air side)	Radiant Panel test Test as per ASTM E162-08	Average Valid Test Flame Index - Rounded to the nearest multiple of five [RP]: 30

Disclaimer

*The results of testing in this report apply only to the sample product/item, which was tested. UL Lab has not participated in the sample selection. This Test report shall not be reproduced except in full without the written approval of the UL Lab. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. *The applicable standard ambient condition supersedes the lab general ambient conditions.*

UL LLC did not select or witness the production of the submitted test samples, determine whether the samples were representative of production samples, nor was UL provided with information relative to the formulation or identification of component materials used in the test samples. The test results apply only to the actual samples tested.

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Renewsys India Pvt. Ltd.

Division: Bengaluru.

Plot Nos. 21, 22, 23, Bommasandra - Jigani Link Road Industrial Area, Taluk Anekal,
Bengaluru - 560105, Karnataka, India.

Tel.: + 91 80 33494545, Fax: + 91 80 33494552. CIN No. U36990MH2011PTC220771
Email: renewsys@renewsysindia.com, Web: www.renewsysworld.com

DATE: 27/07/2018

TO WHOMSOEVER IT MAY CONCERN

Any Single film layer component of a multilayer back sheet meets the UL 1703 par. 7.3 requirements, the composite back sheet which incorporates the film layer is also considered to meet these same requirements.

Based on the highest rated film layer in the respective constructions, the Backsheet RTI (electrical) is 140°C and RTI (strength) is 150°C. The below listed Backsheet's are acceptable for use for PV modules with module operating temperature not to exceed 120° C.

PRESERV 1 150 WD

PRESERV 1 190 WD

PRESERV 1 300 WD

Authorised Signatory:



9/24/2018

UL Certification, E308124 - Photovoltaic Polymeric Materials

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Photovoltaic Polymeric Materials

E308124

Guide Information

RENEWSYS INDIA PRIVATE LIMITED

Plot No 21, 22 & 23, Bommasandra - Jigani Link Road, Industrial Area, Taluk Ankol, Bangalore Karnataka 562106 IN

Preserv 1 300 WD

PVDF/PET/EVAPE, Photovoltaic Backsheets, furnished as sheets

Air-side Color	Cell-side Color	Nom Thk (mm)	Flame Class	HTV	HAI	RII Elec	RII Str
WT	WT	0.305	-	-	-	-	-

Comparative Tracking Index (CTI) -
Dielectric Strength (kV/mm) -
High Voltage Arc Tracking Rate (HVTR) -
Dimensional Stability (%) -

Inclined Plane Tracking (IPT) kV -
Volume Resistivity (10¹² ohm-cm) -
High Volt, Low Current Arc Resis (D406) -

NOTE: All small-scale test data does not pertain to building materials, furnishings and related contents. ANSUL (UL small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of this combination is determined by UL.

Report Date: 2013-05-31

Last Revised: 2017-09-18

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IEC and ISO Test Methods	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	-	-
Glow-Wire Flammability (GWF1)	IEC 60695-2-12	°C	-	-
Glow-Wire Ignition (GWI1)	IEC 60695-2-13	°C	-	-
IEC Partial Discharge	IEC 61730-2, MST 15	Max System Voltage (V)	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	°C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	°C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 4216	kJ/m ²	-	-
ISO Izod Impact	ISO 180	kJ/m ²	-	-
ISO Charpy Impact	ISO 179-2	kJ/m ²	-	-



Manual 4-01



SAFETY, INSTALLATION, OPERATION & MAINTENANCE MANUAL
FOR
SOLAR PHOTOVOLTAIC MODULES

VISAKA INDUSTRIES LIMITED (ATUM DIVISION)
Survey No 95 & 96, Ganjalapuram Village, Kukkadam post, Mandal:
Madgulapally, Adjacent to Kukkadam Railway station, Naigonda,
Telangana 508207, INDIA.



Document Amendment record

A- Added, M- Modified, D- Deleted

S.No	Date	Revision No	Page No	Change Mode (A/M/D)	Brief description of change
1					
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INTRODUCTION

This manual provides safety, installation, operation and maintenance instructions for VISAKA INDUSTRIES LIMITED (ATUM DIVISION) Mono Crystalline Solar photovoltaic (PV) modules.

It is important to read this manual and understand the instructions carefully, before installation, wiring or using the PV modules. Failure to comply with these instructions will invalidate the VISAKA INDUSTRIES LIMITED (ATUM DIVISION) warranty for Crystalline Solar PV modules. VISAKA INDUSTRIES LIMITED (ATUM DIVISION) reserves the right to make changes to the product specifications, or guide without prior notice.

GENERAL INFORMATION

Solar Photovoltaic Modules consist of a series of electrically interconnected crystalline silicon solar cells. Which are permanently encapsulated between a low iron toughened glass superstrate and substrate. The entire laminate is secured within an anodized aluminum frame for structural strength; ease of installation and to protect the cells from the most severe environmental conditions.

Solar PV modules do not require the use of special cable assemblies. All modules come with a permanently attached junction box that will accept variety applications or with a special cable assembly for ease of installation.

The installation of PV modules requires a great degree of skill and should be performed by qualified and authorized skilled persons. Please be aware that there is a serious risk of various types of injury occurring during the installation including the risk of electric shock. the module is able to operate under environmental condition type Air temperature: -40°C to 85°C Rel. Humidity: < 85% RH

PRODUCT IDENTIFICATION

Each module can be identified by means of the following embedded information:

Rating Label:

It is located on the reverse side of the module. According to UL1703 directives it gives information about the main parameters of the module: Product Type, Maximum Power, Current at Maximum Power, Voltage at Maximum power, Open Circuit Voltage, Short Circuit Current, all as measured under Standard Test Conditions, weight, dimensions, Maximum System Voltage, etc.

Serial No with barcode: Each individual module is identified by a unique serial number accompanied with a barcode.

Below given is typical barcode of a Solar Module:

Format : VIL1 YYYY WW D S BBB

VIL1-VISAKA INDUSTRIES LTD (ATUM DIVISION) Line 1

YYYY-Year of Manufacture

WW-Week of the Year

D-Day of the Week 1=Mon7=Sun

S-Shift of the Week

BBB -3 B's (BBB) indicate Batch number in the shift



WARNING

- ❖ PV modules produce electricity when sufficient sunlight or other light source illuminates the module. When modules are connected in series, voltage is cumulative. When modules are connected in parallel, current is cumulative. PV systems can produce high voltage and current which could present as increased hazard and may cause serious injury or death. Although touch protection is provided in the form of the fully insulated plug contacts, the following points must be observed when handling the solar modules to avoid the risk of fire, arcing and fatal electric shock:
 - The installation of higher voltage systems should be done by qualified, licensed professionals.
 - Cover the entire front surface of the PV modules with a dense, opaque material
 - Do not insert electrically conducting parts into the plugs or sockets.
 - Do not wear metallic jewelry while performing mechanical or electrical installation.
 - Do not fit solar modules and wiring with wet plugs and sockets! Tools and working conditions must be dry.
 - Be sure to completely ground all modules.
 - Exercise extreme caution when carrying out work on wiring and use the appropriate safety equipment (insulated tools, insulated gloves, etc.)!
 - Do not use damaged modules! Do not dismantle modules! Do not remove any part or label fitted by the manufacturer! Do not treat the rear of the laminate with paint, adhesives or mark it using sharp objects!
- ❖ PV modules are heavy. Handle with care.
- ❖ Contact with electrically active parts of a PV module such as terminals can result in burns, sparks and lethal shock whether the PV modules connected or not.
- ❖ Before you attempt to install, wire, operate and maintain the PV module, please make sure that you completely understand the information described in this installation manual.

Do not connect PV modules directly to motor loads. Variation in PV module output power as a function of solar irradiance may damage directly connected loads.

- ❖ The inverter can produce dangerous, high voltages, even when not connected:
 - Exercise extreme caution when working on wiring and the inverter.
 - After switching of the inverter, it is essential to wait for the time interval specified by the manufacturer before beginning any further work.
 - This allows the high voltage components time to discharge.
 - Be sure carefully to follow the inverter manufacturer's installation instructions.
- ❖ Modules generate direct current (DC) when any amount of light shines on them. When breaking a connected string of modules (e.g. when disconnecting the DC line from the inverter under load), a lethally strong arc can occur:
 - Never remove the solar generator from the inverter while it is still connected to the main grid!
 - Ensure that the cable connections are in perfect condition (no cracking, soiling or other contamination)!

SAFETY INFORMATION - GENERAL SAFETY



- ❖ Ensure that the SPV module is used for its intended purpose only. Pay attention to the local ordinances, building standards and accident-prevention regulations during installation. The safety information for other system components must also be followed.
- ❖ Install PV modules and ground frames and other metal component in accordance with applicable codes and regulations.
- ❖ PV modules should be installed and maintained by qualified personnel. Only installation / service personnel should have access to the PV module installation site.
- ❖ Keep children away from PV modules.
- ❖ Prior to installation, do not store modules outdoors or in a damp environment to prevent glass from damage due to white efflorescence.
- ❖ When PV modules are installed on roofs or any other structures above ground, appropriate safety practices should be followed and appropriate safety equipment should be used in order to avoid possible safety hazards. Note that the installation of PV modules on some roof types may require the addition of fireproofing, as required by local building / fire codes.
- ❖ Roof mounted PV modules are to be mounted over a fire resistant roof.
- ❖ Only PV modules with the same cell size should be connected in series.
- ❖ Follow all safety precautions of other components used in the system.
- ❖ In order to avoid risk of injury or electrical shock, do not allow anyone to handle damaged PV modules if the person is unqualified or has limited knowledge of PV modules. Place defective PV modules in cartons so PV cells are completely shaded, because a defective PV module or module with broken glass may generate power even if it is removed from the system.
- ❖ Avoid uneven shade on the PV module surface. Shaded cells may become hot and create hot spot, which may result in permanent damage to the module (e.g. solder joints may peel off).
- ❖ Do not clean the glass surface with chemicals. Do not let water stay on the glass surfaces of PV modules for a long time. This creates a risk of permanent damage to the glass, such as white efflorescence, otherwise known as "glass disease," which may cause reduced power output.
- ❖ To avoid dirt accumulation or white efflorescence due to water accumulation, do not install PV modules horizontally (flat).
- ❖ In high snow load regions, appropriate measures are to be taken so that PV module frames (on lower edges of the modules) will not be damaged.
- ❖ Do not expose PV modules to sunlight concentrated with mirrors, lenses or other means.
- ❖ Turn off inverters and circuit breakers immediately, should a problem occur.
- ❖ The maximum open circuit voltage must not be greater than the specified maximum system voltage. Voltage is proportional to the number of PV modules in series and is affected by weather conditions. For strings connected in parallel take proper measures to block reverse current flow.
- ❖ Photovoltaic modules produce DC electricity when exposed to light and therefore can produce an electrical shock or burn. Modules produce voltage even when not connected to an electrical circuit or load. Modules produce nearly full voltage when exposed to as little as 5% of full sunlight and both current and power increase with light intensity. Use insulated tools and rubber gloves when working with modules in sunlight.
- ❖ PV modules have no on/off switch. Modules can be rendered inoperative only by removing them.

from sunlight, or by fully covering their front surface with cloth, cardboard, or other completely opaque material, or by working with modules face down on a smooth, flat surface.

- ❖ Modules can produce higher output than the rated specifications and the "Rated electrical characteristics are within 10 percent of measured values at Standard Test Conditions of: 1000 W/m², 25°C cell temperature & AM 1.5 spectrum as per ASTM E 892". Reflection from snow or water can increase sunlight and therefore boost current and power. In addition, colder temperatures can substantially increase voltage and power.
- ❖ VISAKA INDUSTRIES LIMITED (ATUM DIVISION) modules are constructed with tempered glass, but still must be handled with care. If the front glass is broken or if the polymer back-skin is torn, contact with any module surface or the frame can produce electrical shock, particularly when the module is wet. Broken or damaged modules must be disposed of properly.

IMPORTANT HANDLING & SAFETY INSTRUCTIONS



- ❖ Do not expose the PV module to excessive loads on the surface of the PV module or twist the frame. The glass may break.
- ❖ Do not stand or step on the PV module. The glass may be slippery, and there is a risk of injury or electric shock if glass is broken.
- ❖ Do not hit or put excessive load on the glass or back sheet. PV cells may break.
- ❖ To avoid damage to the back sheet, do not scratch or hit the back sheet.
- ❖ To avoid damage to the terminal box and electricity leakage or shock, do not hit the terminal box; do not pull the interconnect cables; do not scratch the interconnect cable.
- ❖ Avoid the connector from scratching or impacting the back sheet of the module.
- ❖ Install connector such that it is not exposed to direct sunlight.
- ❖ Do not twist the interconnect cable excessively.
- ❖ Never touch the end of the interconnect cables with bare hands when the module is illuminated. Cover the surface of module with cloth or other sufficiently opaque material to block the module from incident light and handle the wires with insulated gloved hands to avoid electric shock.
- ❖ Do not drill holes in the frame. It may compromise the frame strength and cause corrosion of the frame.
- ❖ Do not scratch the anodized coating of the frame (except for grounding connection). It may cause corrosion of the frame or compromise the frame strength.
- ❖ Do not loosen or remove the screws from the PV module. It may compromise the strength of the PV module and cause corrosion.
- ❖ Do not touch the PV module with bare hands. The frame of the PV module has sharp edges and may cause injury. Wear suitable gloves, such as leather gloves with padding in the palm and finger areas.
- ❖ Do not drop the PV module or allow objects to fall on the PV module.
- ❖ Do not lift the PV module by only one side. The frame may bend. Always use two hands to lift and carry the PV module on the long side of the frame.
- ❖ Do not install or handle the modules when they are wet or during periods of high wind.
- ❖ Be familiar with the basic principles of electricity and electrical equipment. Use properly insulated tools and appropriate protective equipment. Obtain and use a voltmeter for all systems where there is more than one module in series.



- ❖ **DANGER!** Module interconnection cables pass DC and are sources of voltage when the module is under load and when it is exposed to light. Direct Current can arc across gaps and may cause injury or death if improper connection or disconnection is made, or if contact is made with module leads that are frayed or torn. Do not connect or disconnect modules when current from the modules or an external source is present.

INSTALLATION SAFETY



- ❖ Always wear protective head gear, insulating gloves and safety shoes (with rubber soles).
- ❖ Keep the PV module packed in the carton until installation.
- ❖ Do not touch the PV module unnecessarily during installation. The glass surface and the frame may be hot. There is a risk of burns and electric shock.
- ❖ Do not work in rain, snow or windy conditions.
- ❖ Due to the risk of electrical shock, do not perform any work if the terminals of the PV module are wet.
- ❖ Use insulated tools.
- ❖ Do not use wet tools.
- ❖ When installing PV modules, do not drop any objects (e.g., PV modules or tools).
- ❖ Make sure flammable gasses are not generated or present near the installation site.
- ❖ Insert interconnect connectors fully and correctly. Check all connections.
- ❖ The interconnect cable should be securely fastened to the module frame, the mounting racking or in a raceway to prevent movement of the interconnect cable over time. Cable support should be done in a way to avoid the connector from scratching or impacting the back sheet of the module.
- ❖ Do not touch the terminal box and the end of the interconnect cables (connectors) with bare hands during installation or under sunlight, regardless of whether the PV module is connected to or disconnected from the system.
- ❖ Do not unplug a connector if the system circuit is connected to an operating load.
- ❖ Do not work alone (always work as a team of 2 or more people).
- ❖ Wear a safety harness when working above the ground.
- ❖ Do not wear metallic jewelry which may conduct electricity and enable electric shock during installation.
- ❖ Do not damage the back sheet of PV modules when fastening the PV modules to a support by bolts.
- ❖ Do not damage the surrounding PV modules or mounting structure when replacing a PV module.
- ❖ Use UV resistant cable ties or other wire management hardware to secure the interconnect cables. Drooping cables may cause various problems, such as leading to electrical shorts.
- ❖ Take proper measures for preventing the laminate (consisting of encapsulate, cells, glass, back sheet, etc.) from dropping out of the frame in case the glass is broken.
- ❖ Cables shall be located so that they will not be exposed to direct sunlight in order to prevent degradation of the interconnect cables.

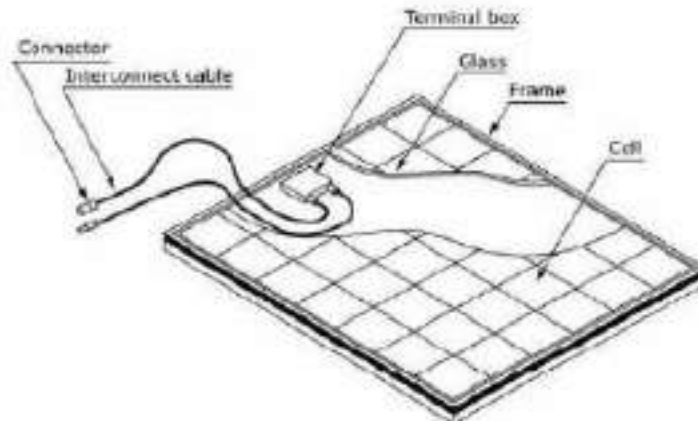


Fig 1: SPV module components

"The fire rating of this module is valid only when mounted in the manner specified in the mechanical mounting instructions."

SITE SELECTION

SPV Modules should be installed in a location where there is no shading throughout the year and they will receive maximum sunlight throughout the year. In the Northern Hemisphere, the Module should typically face south, and in the Southern Hemisphere, the Modules should typically face north. Modules facing 30 degrees away from true South (or North) will lose approximately 10 to 15 per cent of their power output. If the Module faces 60 degrees away from true South (or North), the power loss will be 20 to 30 per cent. Please make sure that there are no obstructions in the surroundings of the site of installation, which could cast shadows on the solar photovoltaic modules especially during the winter months when the arc of the sun is lowest over the horizon. Shading causes loss of output, even though the factory fitted bypass diodes of the SPV Module will minimize any such loss.

Take proper steps in order to maintain reliability and safety in case the PV modules are installed in areas that have heavy snow / extreme cold / strong winds / installations over, or near, water and areas where installations are prone to salt water exposure or on small islands or in desert areas.

TILT ANGLE SELECTION

The tilt angle of the PV module is measured between the surface of the PV module and a horizontal ground surface. The PV module generates maximum output power when it faces the sun directly.

For standalone systems with batteries where the PV modules are attached to a permanent structure, the tilt angle of the PV modules should be selected to optimize the performance based on seasonal load and sunlight. In general, if the PV output is adequate when irradiance is low (e.g., winter), then the angle chosen should be adequate during the rest of the year.

For grid-connected installations where the PV modules are attached to a permanent structure, PV modules should be tilted so that the energy production from the PV modules will be maximized on an annual basis. SPV Modules connected in series should be installed at same orientation and angle. Different orientation or angle may cause loss of output power due to difference of amount of sunlight exposed to the Module.

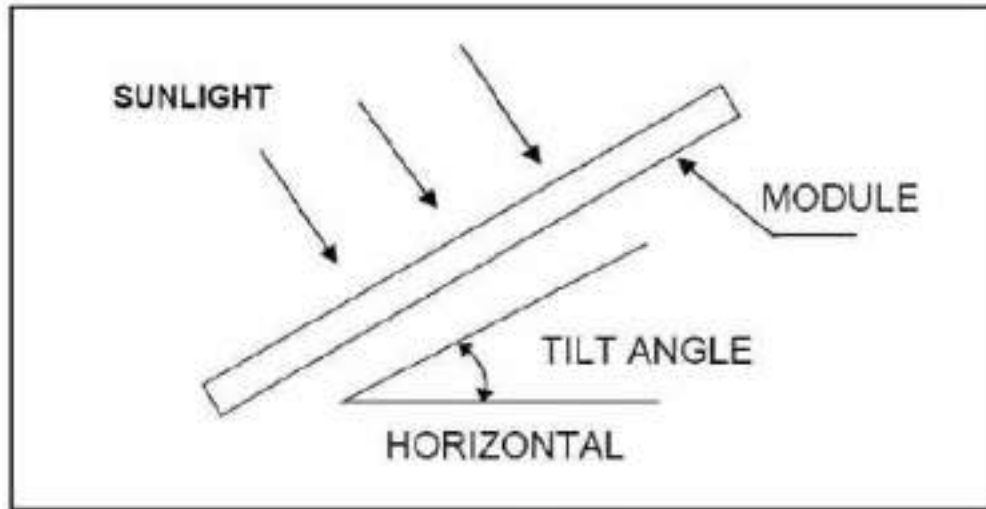


Fig 2: SPV Module Tilt Angle

CODES AND REGULATIONS

The mechanical and electrical installation of PV systems should be performed in accordance with all applicable codes; including electrical codes, building codes, and electric utility interconnect requirements. Such requirements may vary for mounting location, such as building rooftop or motor vehicle applications. Requirements may also vary with system voltage, and for DC or AC application. Contact local authorities for governing regulations. In the U.S., all installations should conform to the National Electrical Code (NEC), ANSI/NFPA 70, including Article 690 on Solar Photovoltaic Systems and all other appropriate articles and sections.

ELECTRICAL INSTALLATION

In the field Wiring System the electrical connection means of module should be marked as:

"+" and "-" or
"POS" and "NEG" or
"POSITIVE" and "NEGATIVE" so as easily visible.

To ensure proper system operation and maintain the warranty, be careful to observe the correct cable connection polarity (Fig 3) when connecting the modules to a battery or to other modules. If not connected correctly, the bypass diode(s) could be destroyed.

Each Module has two #12 AWG type standard 90°C sunlight resistant output cables each terminated with plug & ply connectors. This cable is suitable for applications where wiring is exposed to the direct rays of the Sun. We recommend that all wiring and electrical connections comply with the National Electrical Code (NEC).

For field connections, use the minimum No. #12 AWG copper wires insulated for a minimum of 90°C, rated

for wet conditions and resistant to ultra violet radiation and Sunlight resistant as well. The minimum and maximum outer cable diameters of the cable are 5 to 7mm. Refer to table1 for the maximum electrical rating of series fuse.

All PV modules must be grounded by electrical connection of the module frames to ground. Care must be taken to arrange the system ground so that the removal of one module from the circuit will not interrupt the grounding of any of the other modules. For grounding, each PV module has a hole in the frame for a bolt, nut and washer, a ground lug fastened by bolt or screw, or an appropriate screw (hardware not provided). Installation for wiring shall be in accordance with the NEC and grounding method shall comply with the NEC, article 250 and the relevant instructions below. In a connection of this type, the hardware (such as a star washer) must score the frame surface to make positive electrical contact with the frame.

Hardware used must be compatible with the mounting structure material to avoid galvanic corrosion.

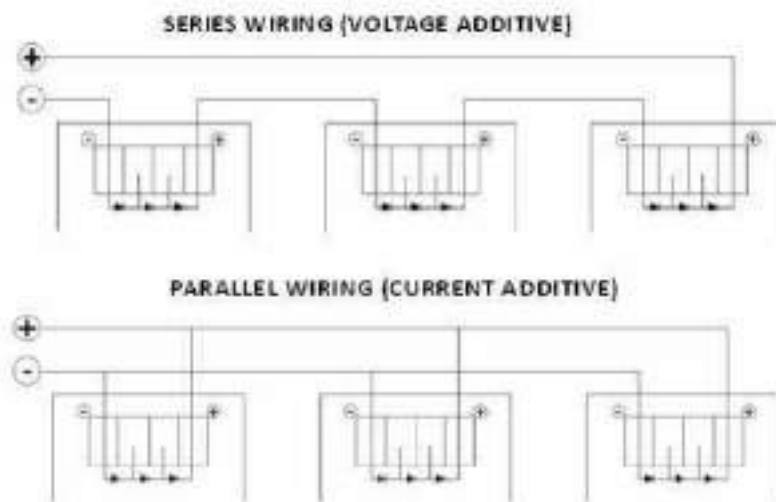


Fig 3 : Module Wiring

PRODUCT SPECIFICATIONS

The module electrical ratings are measured under Standard Test Conditions (STC) of 1KW/m^2 at cell temperature of 25°C with Air mass of 1.5 spectrums. VISAKA INDUSTRIES LIMITED (ATUM DIVISION) modules deliver specific electrical characteristics as the below table.

- Maximum System Voltage (V)	1500
- Maximum Over Current Protection rating (A)	14
- Maximum fuse rating (A)	14
- Application Class for PV Module	A
- Safety Class of PV Modules in accordance with IEC 61140	II



- Fire Resistance Class range – Spread of Flame Test	C
- Recommended Maximum Series/Parallel module configuration	24 in series and 1 in parallel.

For Model No. and Electrical Ratings refer the Back Label pasted on the module.

Bypass Diode Type: Schottky Diode

Model no: 30SQ045T

Ratings of diode: Reverse Voltage: 45V, Forward Current: 30A

MECHANICAL INSTALLATION

The Module frame is made of anodized aluminum, and therefore corrosion can occur if the Module is subject to a salt water environment with contact to a rack of another type of metal (Electrolysis Corrosion). The design load of VISAKA INDUSTRIES LIMITED (ATUM DIVISION) modules is 30 lb/sq ft as per UL standards. If required, stainless steel washers can be placed between the SPV Module frame and support structure to prevent this type of corrosion. Module support structures that are to be used to support SPV Modules at correct tilt angles should be wind and snow load rated for use by the appropriate local and civil codes prior to installation.

"The module is considered to be in compliance with UL 1703 only when the module is mounted in the manner specified by the mounting instructions below."

SPV Modules can be mounted as following method:

- Using corrosion-proof screws (M8) on the existing installing holes in the Module frame

The frame of each Module has 8mm x 12mm mounting holes used to secure the modules to supporting structure. The Module frame must be attached to a supporting structure using M8 stainless steel bolt hardware together with hex nut, spring washers and 2nos of plain washers in four places (i.e. minimum number holes to be used are 4 mounting holes) symmetrical on the SPV Module. The applied torque is about 8 Newton-meters.

The Module clamps must not come into contact with the front glass and must not deform the frame. Avoid shadowing effects from the Module clamps and the insertion systems. It is not permitted to modify the Module frame under any circumstances. Recommended distance between two Solar Modules is 5mm considering linear thermal expansion of the Module frames.

Clearance between the Module frame and mounting surface may be required to prevent the junction box from touching the surface, and to circulate cooling air around the back of the Module.

The Modules are not designed for integral mounting as part of a roof or wall. The mounting design may have an impact on the fire resistance. If the Modules are to be installed on the roof or wall of a building, the fire resistance of roof covering or wall should be rated for the application. Here the standoff method or the rack method is recommended. The Modules are supported parallel to surface of the building wall or roof. Clearance between the Module frames and surface of the wall or roof is required to prevent wiring damage and to allow air to circulate behind the Module. The recommended stand-off height is 115mm. Any slope less than 5in/ft (127mm/305mm) required to maintain a fire class rating. Do not mount SPV Module in such way that the drain holes of SPV Module are intended to block up. The junction box shall be in the uppermost position of slope to minimize the ingress of water.

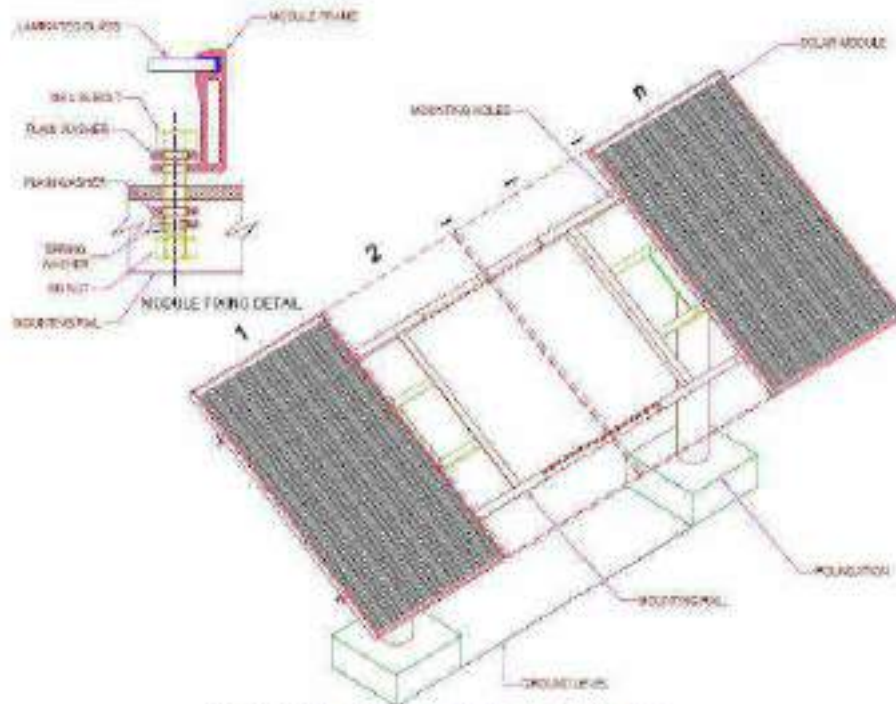



Fig 4: Mechanical Assembly of SPV Modules

GROUNDING

"A module with exposed conductive parts is considered to be in compliance with UL 1703 only when is electrically grounded in accordance with the instructions presented below and the requirements of the National Electrical Code." All Module frames and mounting racks must be properly grounded in accordance with the National Electrical Code NEC. Proper grounding is achieved by connecting the Module frame(s) and structural members contiguously one to another using a suitable grounding conductor. The grounding conductor or strap may be copper, copper alloy, or other material acceptable for use as an electrical conductor per NEC. The grounding conductor must then make a connection to earth using a suitable earth ground electrode.

Attach a separate conductor to one of the 4mm diameter grounding holes marked  on the Module frame with a screw and nut that incorporates an external tooth washers. This is to ensure positive electrical contact with the frame.

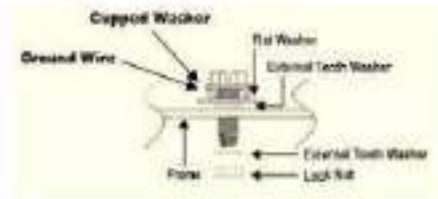
The rack must also be grounded unless they are mechanically connected by nuts and bolts to the grounded SPV Modules. The array frame shall be wired and grounded in accordance with NEC Article 250 & CSA C22.1, Safety Standard for Electrical Installations, Canadian Electrical Code, Part I.

It is recommended to ground each module frame at the provided grounding holes (4 mm or 5/32 inch diameter, marked with the grounding symbol).



The ground connections between modules must be approved by a qualified electrician. The main earth ground must only be connected by a qualified electrician. UL approved grounding method is mandatory in the USA and Canada. Installation shall be in accordance with CSA C22.1, Safety Standard for Electrical Installations, Canadian Electrical Code, Part I.

The modules can be connected at the grounding holes using stainless steel nut, bolt, start washer and flat washer of size



The grounding screw, bolt or other parts are separately used from the mounting parts of the module. The grounding is achieved through securement to the array frame. The array frame shall be grounded in accordance with NEC Article 250.

e M4. The torque rating provided for grounding means is 2.8 Nm [25 in.-lbs]. The grounding method of the frame of arrays shall comply with the NEC, article 250.

BLOCKING DIODES

Blocking diodes are typically placed between the battery and the PV module output to prevent battery discharge at night. VISAKA INDUSTRIES LIMITED (ATUM DIVISION) modules are made of Mono cells with high electrical “back flow” resistance to nighttime battery discharging. As a result, VISAKA INDUSTRIES LIMITED (ATUM DIVISION) modules do not contain a blocking diode when shipped from the factory. Most PV charge regulators do have blocking diodes with nighttime disconnect feature.

BYPASS DIODES

Partial shading of an individual Module can cause a reverse voltage across the shaded SPV Module. Current is then forced through the shaded area by the other Modules.

When a bypass diode is wired in parallel with the series string, the forced current will flow through the diode



and bypass the shaded SPV Module, thereby minimizing Module heating and array current losses. Each module junction box has the bypass diodes installed between two of the terminal screws. Diodes that are used as bypass diodes must: Have a Rated Average Forward Current [IF(AV)] **above** maximum system current at highest module operating temperature. Have a Rated Repetitive Peak Reverse Voltage [VRRM] **above** maximum system voltage at lowest module operating temperature.

BATTERY

When solar modules are used to charge batteries, the battery must be installed in a manner which will protect the performance of the system and the safety of its users. **Follow the battery manufacturer's guidelines concerning installation, operation and maintenance recommendations.** In general, the battery (or battery bank) should be away from the main flow of people and animal traffic. Select a battery site that is protected from sunlight, rain, snow, debris, and is well ventilated. Most batteries generate hydrogen gas when charging, which can be explosive. Do not light matches or create sparks near the battery bank. When a battery is installed outdoors, it should be placed in an insulated and ventilated battery case specifically designed for the purpose.

MAINTENANCE

VISAKA INDUSTRIES LIMITED (ATUM DIVISION) Modules are designed for long life and require very little maintenance. Visually inspect all modules annually for safe electrical connections, sound mechanical connection, and free from corrosion. This visual inspection should be performed from ground level. Under most weather conditions, normal rainfall is sufficient to keep the SPV Module glass surface clean when the angle of the PV module is 5° or more. If dirt build-up becomes excessive, clean the glass only with a soft cloth using water. If cleaning back of the module is required, take utmost care not to damage the backside materials for smaller power plants. For the bigger power plants clean a module, wash with potable, non-heated water. Normal water pressure is more than adequate, but pressurized water upto 1500psi may be used. Finger prints, stains, or accumulations of dirt on the front surface may be removed as follows. First rinse off area and let soak for a short period of time (5 minutes) re-wet and use a soft sponge or seamless cloth to wipe glass surface in a circular motion. Fingerprints typically can be removed with a soft cloth or sponge and water after wetting. Do not use harsh cleaning materials such as scouring powder, steel wool, scrapers, blades or other sharp instruments to clean the glass surface of the module. Use of such materials or cleaning without consultation will invalidate the product warranty. SPV Modules that are mounted flat (0° tilt angle) should be cleaned more often, as they will not "self clean" as effectively as modules mounted at a 15° tilt or greater. In order to ensure proper operation of the system, the following system be inspected at regular intervals

- a) Check all wiring connections are secure, tight, clean and free of corrosion.
- b) The condition of the wire insulation periodically. Cables are not damaged in any way.
- c) The conductivity of module frame to earth ground.
- d) Also, check to be sure that mounting hardware is tight. Loose connections will result in damage for array.
- e) Changed SPV Module must be the same kind and type.



DISCLAIMER OF LIABILITY

The installation techniques, handling and use of this product are beyond company control. Therefore, VISAKA INDUSTRIES LIMITED (ATUM DIVISION) does not assume responsibility and expressly disclaims liability for loss, damage or expense arising out of, or in any way connected with resulting from improper installation, operation, maintenance, handling or use.

Since the use of this Safety, Installation, Operation and Maintenance Manual and the conditions of installation, operation, use and maintenance of the module are beyond VISAKA INDUSTRIES LIMITED (ATUM DIVISION) control, VISAKA INDUSTRIES LIMITED (ATUM DIVISION) does not assume responsibility and expressly disclaims liability for loss, damage, injury or expense arising out of or in any way connected with such installation, operation, use or maintenance of the module. VISAKA INDUSTRIES LIMITED (ATUM DIVISION) assumes no responsibility for any infringement of patents or other rights of third parties that may result from use of the module. No license is granted by implication or otherwise under any patent or patent rights.

The Information in this Manual is based on VISAKA INDUSTRIES LIMITED (ATUM DIVISION) knowledge and experience and is believed to be reliable; but such information including product specifications (without limitations) and suggestions do not constitute a warranty, expressed or implied. VISAKA INDUSTRIES LIMITED (ATUM DIVISION) reserves the right to make changes to the product, specifications or this manual without prior notice.

LIMITED WARRANTY

Module limited warranties are described in full in the VISAKA INDUSTRIES LIMITED (ATUM DIVISION) warranty certificates obtainable at VISAKA INDUSTRIES LIMITED (ATUM DIVISION) sales. In summary, the Limited Warranties do not apply to any of the following:

PV modules which in VISAKA INDUSTRIES LIMITED (ATUM DIVISION)'s absolute judgment have been subjected to: misuse, abuse, neglect or accident; alteration, improper installation, application or removal (including but not limited to installation, application or removal by any un authorized party; non-observance of VISAKA INDUSTRIES LIMITED (ATUM DIVISION)'s installation, users and/or maintenance instructions; repair or modifications by someone other than an approved service technician of VISAKA INDUSTRIES LIMITED (ATUM DIVISION); power failure surges, lightning, flood, fire, accidental breakage or other events outside VISAKA INDUSTRIES LIMITED (ATUM DIVISION)'s control.



Annex: 4 Electrical data table.

PV Module Type Name	Open Circuit Voltage @ STC, (Voc)	Rated Voltage @ STC/Vmp (V dc)	Maximum System Voltage, (V dc)	Rated Current @ STC/Imp (A)	Short Circuit Current @ STC/Isc (A)	Rated Maximum Power at STC, (Watts)	Maximum Series Fuse, (A)
72 cell series (Monocrystalline)							
VIL-370M	49.36	40.70	1500	9.11	9.68	370	14

-----End of TRF IS/IEC 61730-1-----

**VISAKA INDUSTRIES LTD**Survey .No 95,96, Gajalapuram-Village,
Peddadevullapally –Post., Tripuraram-Mandal
Near Miryalguda, Nalgonda- 508207.

Doc No # : VIL-QC-IV TEST

Rev No. : AA
Originator: Sriram**Title :- IV TEST RESULTS****IV TEST RESULTS**

Invoice No:-	22695310009
Invoice Date:-	14-Jan-23
Invoice Qty:-	48
MODEL No:-	S-FG-01-072A-375W
Customer Name:-	Hindustan Blue Coast Trading Co.
Report No:-	23012023001

IV TEST RESULTS : -

SL No	Serial No	Voc	Isc	PMAX	Vpm	IPm	Fill Factor
1	VIL120230111046	49.489651	9.772	376.019928	40.550434	9.272896	77.752258
2	VIL120230111044	49.451958	9.701646	376.132538	41.02866	9.167556	78.399261
3	VIL120230111042	49.409546	9.714441	377.517914	40.834793	9.245006	78.65184
4	VIL120230111041	49.473557	9.785367	377.682434	40.738094	9.270988	78.014717
5	VIL120230111037	49.382832	9.820676	377.483856	40.250233	9.378426	77.83609
6	VIL120230111040	49.462955	9.711064	379.369049	41.169262	9.214862	78.979614
7	VIL120230111038	49.421463	9.766918	378.32724	40.669239	9.30254	78.378044
8	VIL120230111003	49.426651	9.809986	379.968323	40.819447	9.308513	78.36422
9	VIL120230111002	49.422043	9.697001	375.637939	40.870087	9.191024	78.381088
10	VIL120230111036	49.523823	9.755198	377.757416	41.215256	9.165475	78.19207
11	VIL120230111035	49.536339	9.741729	376.339386	40.923325	9.207214	78.079895
12	VIL120230111034	49.530083	9.76188	376.002319	40.976608	9.237143	78.283653
13	VIL120230111033	49.429775	9.698051	375.814941	41.121105	9.154158	78.525383
14	VIL120230111032	49.438366	9.693422	378.429718	41.035923	9.16227	78.455978
15	VIL120230111031	49.432514	9.70048	376.363983	40.916096	9.198433	78.487801
16	VIL120230111029	49.490501	9.715375	377.330872	40.813854	9.245166	78.47673
17	VIL120230111025	49.520645	9.719686	375.26001	40.969074	9.232818	78.587227
18	VIL120230112016	49.473976	9.743258	376.4664	40.744316	9.239729	78.098961
19	VIL120230111004	49.498096	9.702308	379.848419	41.277374	9.202339	79.094589
20	VIL120225252049	49.458683	9.702158	376.096375	41.072178	9.156962	78.376938
21	VIL120225252050	49.402718	9.68649	375.562653	40.980751	9.164368	78.48111
22	VIL120230111001	49.431958	9.671646	378.132538	41.02865	9.167554	78.399262
23	VIL120230111017	49.439546	9.704414	378.517914	40.834397	9.245126	78.64481
24	VIL120225262026	49.606735	9.758415	379.364929	41.051781	9.241132	78.367722
25	VIL120230132028	49.434883	9.705215	375.804016	40.887592	9.191151	78.329033
26	VIL120225251017	49.531929	9.685538	375.221344	40.954933	9.225596	78.757454
27	VIL120230141088	49.51136	9.733422	376.238464	40.86483	9.232355	78.287384
28	VIL120230141084	49.480175	9.72578	376.64975	40.839188	9.222754	78.267593

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Near Miryalguda, Nalgonda- 508207.

Doc No # : VIL-QC-IV TEST

Rev No. : AA
Originator: Sriram**Title :- IV TEST RESULTS**

29	VIL120225231066	49.624653	9.699346	377.602783	41.073189	9.193413	78.450417
30	VIL120225021039	49.43742	9.688152	376.64032	41.121975	9.159101	78.637566
31	VIL120225031098	49.573486	9.713296	376.815552	40.871403	9.219541	78.255119
32	VIL120225021044	49.476959	9.707899	377.33667	40.958103	9.212748	78.559875
33	VIL120225021049	49.425777	9.697151	375.924591	41.059612	9.155581	78.433769
34	VIL120225021064	49.480072	9.709996	376.655701	40.958954	9.19593	78.396217
35	VIL120225021050	49.462788	9.780493	377.838409	40.611435	9.303744	78.102837
36	VIL120225021055	49.359722	9.705686	376.198761	40.719673	9.238748	78.526901
37	VIL120225021062	49.277672	9.732261	375.883972	41.015308	9.16448	78.377235
38	VIL120225021048	49.348007	9.722896	376.467468	40.771294	9.233641	78.462517
39	VIL120225032005	49.461494	9.699835	375.871399	40.76553	9.220325	78.34436
40	VIL120225021056	49.546146	9.718669	377.142395	41.00462	9.197558	78.322891
41	VIL120225021047	49.65078	9.723688	379.935852	41.120586	9.239553	78.696091
42	VIL120225021057	49.573906	9.645091	375.755951	41.044033	9.154947	78.58622
43	VIL120225031091	49.60178	9.62938	377.1922	41.379261	9.115488	78.970909
44	VIL120225021053	49.593246	9.64669	379.80368	41.261608	9.204771	79.388634
45	VIL120225031075	49.657433	9.625875	377.865143	41.562561	9.091479	79.05191
46	VIL120225021052	49.607632	9.684456	378.491669	41.458057	9.129508	78.783012
47	VIL120225031097	49.530708	9.649148	376.358246	41.053524	9.167501	78.747704
48	VIL120225021063	49.595707	9.663698	377.355652	41.296761	9.137658	78.7342

Revision History Page

Document Number	Issue Date	Originator	Revision	Reason for update
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Near Miryalguda, Nalgonda- 508207.Doc No # : VIL-QC-CERTIFICATE OF
ANALYSISRev No. : AA
Originator: SriramTitle :- **IV TEST RESULTS****IV TEST RESULTS**

Invoice No:-	23128310008
Invoice Date:-	28/04/2023
Invoice Qty:-	96
MODEL No:-	S-FG-01-072A-375W
Customer Name:-	Hindustan Blue Coast Trading Co.
Report No:-	16052023002

IV TEST RESULTS : -

SL No	Serial No	Voc	Isc	PMAX	Vpm	IPm	Fill Factor
1	VIL120231431106	49.489651	9.772	376.019928	40.55043	9.272896	77.752258
2	VIL120231441012	49.451958	9.701646	376.132538	41.02866	9.167556	78.399261
3	VIL120231441015	49.409546	9.714441	377.517914	40.83479	9.245006	78.65184
4	VIL120231441016	49.473557	9.785367	377.682434	40.73809	9.270988	78.014717
5	VIL120231441017	49.382832	9.820676	377.483856	40.25023	9.378426	77.83609
6	VIL120231441020	49.462955	9.711064	379.369049	41.16926	9.214862	78.979614
7	VIL120231441022	49.421463	9.766918	378.32724	40.66924	9.30254	78.378044
8	VIL120231441023	49.426651	9.809986	379.968323	40.81945	9.308513	78.36422
9	VIL120231441024	49.422043	9.697001	375.637939	40.87009	9.191024	78.381088
10	VIL120231441025	49.523823	9.755198	377.757416	41.21526	9.165475	78.19207
11	VIL120231441026	49.536339	9.741729	376.339386	40.92333	9.207214	78.079895
12	VIL120231441027	49.530083	9.76188	376.002319	40.97661	9.237143	78.283653
13	VIL120231441028	49.429775	9.698051	375.814941	41.12111	9.154158	78.525383
14	VIL120231441030	49.438366	9.693422	378.429718	41.03592	9.16227	78.455978
15	VIL120231441031	49.432514	9.70048	376.363983	40.9161	9.198433	78.487801
16	VIL120231441032	49.490501	9.715375	377.330872	40.81385	9.245166	78.47673
17	VIL120231441033	49.520645	9.719686	375.26001	40.96907	9.232818	78.587227
18	VIL120231441034	49.473976	9.743258	376.4664	40.74432	9.239729	78.098961
19	VIL120231441037	49.498096	9.702308	379.848419	41.27737	9.202339	79.094589
20	VIL120231441038	49.458683	9.702158	376.096375	41.07218	9.156962	78.376938
21	VIL120231441039	49.402718	9.68649	375.562653	40.98075	9.164368	78.48111

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ANALYSISRev No. : AA
Originator: SriramTitle :- **IV TEST RESULTS**

22	VIL120231441042	49.431958	9.671646	378.132538	41.02865	9.167554	78.399262
23	VIL120231441045	49.439546	9.704414	378.517914	40.8344	9.245126	78.64481
24	VIL120231441048	49.606735	9.758415	379.364929	41.05178	9.241132	78.367722
25	VIL120231441049	49.510918	9.688642	378.138855	41.31688	9.152164	78.829254
26	VIL120231441050	49.517235	9.695466	378.192017	41.30536	9.156002	78.774796
27	VIL120231441051	49.601135	9.61347	379.011658	41.5729	9.116796	79.484192
28	VIL120231441063	49.452782	9.665671	379.061371	41.27745	9.183256	79.302483
29	VIL120231441064	49.434296	9.788296	379.64328	41.01062	9.257195	78.458549
30	VIL120231441065	49.666798	9.691944	379.969269	41.6264	9.128085	78.935326
31	VIL120231441066	49.542336	9.70205	379.334869	41.60788	9.116899	78.919212
32	VIL120231441067	49.206196	9.773816	380.12204	40.99036	9.273449	79.038574
33	VIL120231441068	49.187439	9.774999	380.644928	41.05687	9.271163	79.1679
34	VIL120231441069	49.53046	9.799106	379.491058	40.81932	9.296848	78.188477
35	VIL120231441070	49.084965	9.74948	381.876312	40.95724	9.323781	79.798141
36	VIL120231441071	48.884914	9.848297	380.191193	40.70887	9.339272	78.970711
37	VIL120231441073	48.927101	9.752015	380.444122	40.84772	9.313718	79.734642
38	VIL120231441075	48.874443	9.750566	381.976105	41.15763	9.280809	80.153877
39	VIL120231441076	48.810692	9.720413	380.052734	41.02261	9.264471	80.10215
40	VIL120231441077	48.866169	9.741787	381.552032	40.85523	9.339123	80.150612
41	VIL120231441079	48.78709	9.725972	380.430786	40.86153	9.310243	80.174767
42	VIL120231441082	48.890923	9.838191	380.572845	40.83236	9.320373	79.12146
43	VIL120231441084	49.354317	9.665083	380.486237	41.21753	9.231175	79.764236
44	VIL120231441085	49.003239	9.759056	381.332001	41.18337	9.25937	79.738976
45	VIL120231441086	49.092545	9.755106	380.913757	41.17207	9.251752	79.538818
46	VIL120231441087	49.001076	9.750683	381.700165	41.21967	9.260145	79.888031
47	VIL120231441088	49.163334	9.74685	381.531281	41.16728	9.267829	79.620438
48	VIL120231441089	49.066845	9.753258	381.81189	41.14296	9.280127	79.783226
49	VIL120231441090	49.038937	9.745961	381.980743	41.08986	9.296227	79.923729
50	VIL120231441091	49.029316	9.74378	381.828094	41.0939	9.291601	79.925362
51	VIL120231441092	49.103783	9.822798	380.246368	40.88384	9.300653	78.834251
52	VIL120231441093	48.962902	9.814341	380.117554	40.71922	9.335089	79.102402
53	VIL120231441094	49.505943	9.688374	380.055298	41.17881	9.22939	79.238922
54	VIL120231441095	49.606735	9.758415	379.364929	41.05178	9.241132	78.367722

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ANALYSISRev No. : AA
Originator: SriramTitle :- **IV TEST RESULTS**

55	VIL120231441096	49.327305	9.792033	380.93158	41.07056	9.275051	78.86544
56	VIL120231441099	49.525173	9.778561	379.811768	40.9302	9.2795	78.427338
57	VIL120231441100	49.383556	9.789509	377.70459	41.13142	9.182874	78.12841
58	VIL120231441101	49.339882	9.792887	378.034668	41.13565	9.189952	78.238914
59	VIL120231441102	49.474152	9.731151	378.230255	41.29248	9.159784	78.56221
60	VIL120231441103	49.458225	9.76476	378.192963	41.01428	9.221006	78.309303
61	VIL120231441104	49.566216	9.763943	379.366272	41.26457	9.193489	78.387665
62	VIL120231441105	49.487877	9.778408	379.414307	41.04523	9.243811	78.40554
63	VIL120231441106	49.46278	9.8397	378.655365	40.61518	9.323001	77.800743
64	VIL120231441107	49.388721	9.752975	378.680878	41.03342	9.228597	78.615547
65	VIL120231441108	49.162411	9.733856	378.118652	40.97794	9.227371	79.015083
66	VIL120231441110	49.417446	9.858581	378.871063	40.5826	9.335801	77.76725
67	VIL120231441111	49.423241	9.744145	378.831573	41.06879	9.224317	78.663124
68	VIL120231441112	49.619629	9.782648	379.850983	41.27076	9.203876	78.253418
69	VIL120231441113	49.653561	9.739985	378.164673	41.06134	9.209751	78.193787
70	VIL120231441114	49.746857	9.693837	378.670288	41.144	9.203536	78.523537
71	VIL120231441115	49.799164	9.782204	379.8367	40.95748	9.271664	77.971909
72	VIL120231441116	49.651501	9.757135	378.30304	41.02863	9.220465	78.088142
73	VIL120231441117	49.419697	9.836995	378.039642	40.65989	9.29532	77.763329
74	VIL120231441118	49.62434	9.707764	379.174896	41.21176	9.200649	78.709229
75	VIL120231441119	49.605877	9.679249	379.117432	41.42299	9.152345	78.958519
76	VIL120231441120	49.674976	9.640641	378.492493	41.59048	9.100461	79.033951
77	VIL120231451016	49.792324	9.657556	378.823578	41.67806	9.089281	78.778442
78	VIL120231451022	49.695984	9.623171	378.738342	41.49183	9.128022	79.195366
79	VIL120231451025	49.781322	9.61897	379.125366	41.5471	9.125196	79.174965
80	VIL120231451027	49.860176	9.655335	378.002594	41.37096	9.136908	78.518799
81	VIL120231451028	49.856419	9.640521	379.742432	41.54095	9.141399	79.007355
82	VIL120231451029	49.64185	9.689346	379.224823	41.25451	9.192324	78.841408
83	VIL120231451030	49.464638	9.707455	379.183685	41.32243	9.17622	78.96769
84	VIL120231451031	49.459774	9.706788	379.213257	41.32075	9.177309	78.987045
85	VIL120231461002	49.556061	9.691704	379.055817	41.39957	9.156032	78.923492
86	VIL120231461021	49.510918	9.688642	378.138855	41.31688	9.152164	78.829254
87	VIL120231461042	49.517235	9.695466	378.192017	41.30536	9.156002	78.774796

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ANALYSISRev No. : AA
Originator: SriramTitle :- **IV TEST RESULTS**

88	VIL120231461087	49.601135	9.61347	379.011658	41.5729	9.116796	79.484192
89	VIL120231461092	49.452782	9.665671	379.061371	41.27745	9.183256	79.302483
90	VIL120231461093	49.434296	9.788296	379.64328	41.01062	9.257195	78.458549
91	VIL120231461094	49.666798	9.691944	379.969269	41.6264	9.128085	78.935326
92	VIL120231461095	49.542336	9.70205	379.334869	41.60788	9.116899	78.919212
93	VIL120231511008	49.547405	9.710902	378.448822	40.9958	9.231406	78.65506
94	VIL120231511061	49.560452	9.723136	378.269928	41.05826	9.213005	78.498291
95	VIL120231511062	49.695518	9.693665	378.338806	41.17941	9.187572	78.537254
96	VIL120231511064	49.409863	9.733562	378.360077	41.17927	9.188121	78.671936

Document Number	Issue Date	Originator	Revision	Reason for update
VIL-QC-Certificate Of Analysis	26-April-2018	Sriram	AA	New document creation

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**VISAKA INDUSTRIES LTD**Survey No 85,96, Gajalapuram-Village,
Peddadevullapally -Post., Tripuraram-Mandal
Near Miryalguda, Nalgonda- 508207.Doc No # : VIL-QC-CERTIFICATE OF
ANALYSISRev No. : AA
Originator: SriramTitle :- **IV TEST RESULTS****IV TEST RESULTS**

Invoice No:-	22128310197
Invoice Date:-	31/03/2023
Invoice Qty:-	24
MODEL No:-	S-FG-01-072A-375W
Customer Name:-	Hindustan Blue Coast Trading Co.
Report No:-	16052023001

IV TEST RESULTS : -

Sl No	Serial No	Voc	Isc	PMAX	Vpm	IPm	Fill Factor
1	VIL120231012028	49.531929	9.685538	377.833679	40.95493	9.225596	78.757454
2	VIL120231012033	49.603897	9.809175	379.783325	40.95961	9.272142	78.052643
3	VIL120231012052	49.462955	9.711064	379.369049	41.16926	9.214862	78.979614
4	VIL120231022043	49.421463	9.766918	378.32724	40.66924	9.30254	78.378044
5	VIL120231022045	49.426551	9.809986	379.968323	40.81945	9.308513	78.36422
6	VIL120231022046	49.477123	9.669766	379.181305	41.24896	9.192507	79.254967
7	VIL120231022047	49.468105	9.699453	379.086151	41.24483	9.191119	79.006958
8	VIL120231022055	49.541046	9.721677	379.812469	41.48797	9.154762	78.861107
9	VIL120231022056	49.498096	9.702308	379.848419	41.27737	9.202339	79.094589
10	VIL120231022072	49.412949	9.763609	379.1185	40.77079	9.298778	78.58213
11	VIL120231022076	49.472561	9.816374	379.368927	40.88198	9.279613	78.117126
12	VIL120231022077	49.567047	9.781485	379.412994	40.97121	9.260478	78.255409
13	VIL120231031002	49.451935	9.733896	377.623444	40.94058	9.223696	78.44928
14	VIL120231031047	49.506081	9.805882	378.369019	40.96048	9.237415	77.941795
15	VIL120231031073	49.487068	9.75808	378.355408	41.1093	9.203647	78.350868
16	VIL120231031095	49.571598	9.795134	378.904114	40.84773	9.276013	78.034386
17	VIL120231031099	49.590374	9.788811	378.322693	40.75769	9.282242	77.935455
18	VIL120231031099	49.559307	9.727072	379.500153	41.3955	9.167666	78.723534
19	VIL120231032021	49.567932	9.68504	377.020264	41.31797	9.12485	78.534866
20	VIL120231032024	49.598434	9.719403	379.277832	41.4285	9.154998	78.677383
21	VIL120231032026	49.42778	9.695012	377.253632	40.84686	9.235806	78.725227

Prepared by

Checked by

Approved by

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22	VIL120231032028	49.462608	9.765683	378.138519	40.96494	9.230785	78.283691
23	VIL120231032029	49.589626	9.635262	378.583527	41.53341	9.115157	79.233231
24	VIL120231032031	49.668671	9.69155	378.828125	41.27306	9.178581	78.698494

Document Number	Issue Date	Originator	Revision	Reason for update
VIL-QC-Certificate Of Analysis	26-April-2018	Sriram	AA	New document creation

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Checked by

Approved by 