

Musina Solar Module Warranty Paper

Limited warranty of Musina PV Modules. Version: 2024

1. Limited product warranty – Thirty years' repair, replacement

Musina warrants its PV modules to be free from defects in materials and workmanship under normal application, installation, use and service conditions. If modules fail to conform to this warranty, then for a period ending 360 months from the date of sales to the original terminal customer (hereinafter referred to as “customer”), Musina will repair or replace the modules for the customers. The repair or the replacement shall be the sole and exclusive remedy provided under the “Limited product warranty” and shall not extend beyond the 360 months period set forth herein. The “Limited product warranty” does not warrant a specific power output, which shall be exclusively covered under clause 2 hereinafter (“Limited peak power warranty”).

2. Limited Peak Power Warranty

- Power test conditions: The test of the peak power of the delivered modules should be made under standard test conditions: an irradiation of $1000\text{W}/\text{m}^2$, temperature 25°C , AM1.5. $1000\text{W}/\text{m}^2$ is the standard light intensity when we test the solar cells. AM1.5 refers to the actual distance of light pass through the atmosphere is 1.5 times of the vertical thickness of the atmosphere. 25°C means the modules should work in the temperature of 25°C .
- Warranty conditions: The customer must handle the product properly. The design, installation, operation environment and maintenance of the solar system should follow the installation guide and relevant regulations.
- Power Attenuation

PERC solar module

A. Monofacial

The Warranty Start Date is the date of installation of the Product(s) or three months after delivery (Incoterms 2020) of the Products(s) to the Buyer, whichever date is earlier. In addition, Musina warrants that for a period of thirty years commencing on the Warranty Start Date, the loss of power output relating to the initial guaranteed power which is defined as Peak Power Watts P_{max} (W_p) plus Peak Power Watts P_{max} (W_p) multiplied by the lower limit of the Power Output Tolerance P_{max} (%) – as specified in the relevant Product Data Sheet and measured at Standard Test Conditions (STC) for the Product(s) shall not exceed:

- a. For monocrystalline products (according to the model in the IEC certificate): 2.5% in the first year,

0.5% per year thereafter, at the end of the 30-year warranty not less than 83.0% of the maximum output power.

- b. Actual output power must be verified under STC conditions and measured by Musina or a third-party testing facility approved by Musina. (Note: According to the STC, the uncertainty of the measurement system will apply to all actual power output measurements.)
- c. The definition of high temperature and high humidity environment: temperature condition is annual average temperature > 23°C, minimum monthly average temperature > 18°C, humidity condition is annual average RH > 70%, minimum monthly average RH > 60%.

B. Bifacial With Transparent Backsheet

The Warranty Start Date is the date of installation of the Product(s) or three months after delivery (Incoterms 2020) of the Products(s) to the Buyer, whichever date is earlier. In addition, Musina warrants that for a period of thirty years commencing on the Warranty Start Date, the loss of power output relating to the initial guaranteed power which is defined as Peak Power Watts Pmax (Wp) plus Peak Power Watts Pmax (Wp) multiplied by the lower limit of the Power Output Tolerance Pmax (%) – as specified in the relevant Product Data Sheet and measured at Standard Test Conditions (STC) for the Product(s) shall not exceed:

- a. For monocrystalline products (according to the model in the IEC certificate): 2.5% in the first year, 0.5% per year thereafter, at the end of the 30-year warranty not less than 83.0% of the maximum output power.
- b. Actual output power must be verified under STC conditions and measured by Musina or a third-party testing facility approved by Musina. (Note: According to the STC, the uncertainty of the measurement system will apply to all actual power output measurements.)
- c. The definition of high temperature and high humidity environment: temperature condition is annual average temperature > 23°C, minimum monthly average temperature > 18°C, humidity condition is annual average RH > 70%, minimum monthly average RH > 60%.

C. Bifacial With Dual Glass

The Warranty Start Date is the date of installation of the Product(s) or three months after delivery (Incoterms 2020) of the Products(s) to the Buyer, whichever date is earlier. In addition, Musina warrants that for a period of thirty years commencing on the Warranty Start Date, the loss of power output relating to the initial guaranteed power which is defined as Peak Power Watts Pmax (Wp) plus Peak Power Watts Pmax (Wp) multiplied by the lower limit of the Power Output Tolerance Pmax (%) – as specified in the relevant Product Data Sheet and measured at Standard Test Conditions (STC) for the Product(s) shall not exceed:

- a. For monocrystalline products (according to the model in the IEC certificate): 2% in the first year,

0.45% per year thereafter, at the end of the 30-year warranty not less than 84.95% of the maximum output power.

- b. Actual output power must be verified under STC conditions and measured by Musina or a third-party testing facility approved by Musina. (Note: According to the STC, the uncertainty of the measurement system will apply to all actual power output measurements.)

N-TYPE solar module

A. Monofacial

The Warranty Start Date is the date of installation of the Product(s) or three months after delivery (Incoterms 2020) of the Products(s) to the Buyer, whichever date is earlier. In addition, Musina warrants that for a period of thirty years commencing on the Warranty Start Date, the loss of power output relating to the initial guaranteed power which is defined as Peak Power Watts P_{max} (W_p) plus Peak Power Watts P_{max} (W_p) multiplied by the lower limit of the Power Output Tolerance P_{max} (%) – as specified in the relevant Product Data Sheet and measured at Standard Test Conditions (STC) for the Product(s) shall not exceed:

- a. For monocrystalline products (according to the model in the IEC certificate): 1% in the first year, 0.4% per year thereafter, at the end of the 30-year warranty not less than 87.4% of the maximum output power.
- b. Actual output power must be verified under STC conditions and measured by Musina or a third-party testing facility approved by Musina. (Note: According to the STC, the uncertainty of the measurement system will apply to all actual power output measurements.)
- c. The definition of high temperature and high humidity environment: temperature condition is annual average temperature > 23°C, minimum monthly average temperature > 18°C, humidity condition is annual average RH > 70%, minimum monthly average RH > 60%.

B. Bifacial With Transparent Backsheet

The Warranty Start Date is the date of installation of the Product(s) or three months after delivery (Incoterms 2020) of the Products(s) to the Buyer, whichever date is earlier. In addition, Musina warrants that for a period of thirty years commencing on the Warranty Start Date, the loss of power output relating to the initial guaranteed power which is defined as Peak Power Watts P_{max} (W_p) plus Peak Power Watts P_{max} (W_p) multiplied by the lower limit of the Power Output Tolerance P_{max} (%) – as specified in the relevant Product Data Sheet and measured at Standard Test Conditions (STC) for the Product(s) shall not exceed:

- a. For monocrystalline products (according to the model in the IEC certificate): 1% in the first year, 0.4% per year thereafter, at the end of the 30-year warranty not less than 87.4% of the maximum

output power.

- b. Actual output power must be verified under STC conditions and measured by Musina or a third-party testing facility approved by Musina. (Note: According to the STC, the uncertainty of the measurement system will apply to all actual power output measurements.)
- c. The definition of high temperature and high humidity environment: temperature condition is annual average temperature > 23°C, minimum monthly average temperature > 18°C, humidity condition is annual average RH > 70%, minimum monthly average RH > 60%

C. Bifacial With Dual Glass

The Warranty Start Date is the date of installation of the Product(s) or three months after delivery (Incoterms 2020) of the Products(s) to the Buyer, whichever date is earlier. In addition, Musina warrants that for a period of thirty years commencing on the Warranty Start Date, the loss of power output relating to the initial guaranteed power which is defined as Peak Power Watts Pmax (Wp) plus Peak Power Watts Pmax (Wp) multiplied by the lower limit of the Power Output Tolerance Pmax (%) – as specified in the relevant Product Data Sheet and measured at Standard Test Conditions (STC) for the Product(s) shall not exceed:

- a. For monocrystalline products (according to the model in the IEC certificate): 1% in the first year, 0.4% per year thereafter, at the end of the 30-year warranty not less than 87.4% of the maximum output power.
 - b. Actual output power must be verified under STC conditions and measured by Musina or a third-party testing facility approved by Musina. (Note: According to the STC, the uncertainty of the measurement system will apply to all actual power output measurements.)
- Within the limitation of the corresponding quality assurance if the product is in doubt, can be sent to appointed test lab by Musina or admitted by Musina for testing, Musina authorized letter must be confirmed before send samples for testing, product must be in good appearance. During the testing, such as a power output is lower than the standards listed in the above form and proved that the loss of power is Musina reasons, after the customer provide the relevant documentary evidence, Musina will providing additional product to compensate for the power loss portion.
 - The remedy provided in this article is the only and exclusive remedy under the "limited Peak power guarantee".
 - Defects caused by material and process problems should be given after-sales plan in accordance with the terms of "Limited Product Warranty", "Limited Peak Power Guarantee"
 - No compensation will be given to the power loss caused by the above-mentioned defects.

3. Exclusions and Limitations

- A. In any event, all warranty claims must be received within the applicable warranty period for this warranty to be effective.
- B. The “Limited Product Warranty” and the “Limited Peak Power Warranty” do not apply to any MODULES which have been subjected to:
 - 1. Misuse, abuse, vandalism, neglect or accident;
 - 2. Alteration, improper installation or application;
 - 3. Non-observance of Musina’s installation manual or maintenance instructions;
 - 4. Repair or modifications by someone other than an approved service technician of Musina;
 - 5. Power failure surges, lightning, flood, fire, accidental breakage, improper connections resulting in hazardous reverse current or other events outside Musina’s control.
- C. Both “Limited Product Warranty” and “Limited Peak Power Warranty” do not cover any costs associated with transportation, installation, removal or re-installation for return of the modules.
- D. Warranty claims will not be honored if the type or serial number of the MODULES have been altered, removed or made illegible.

4. Limitation of Warranty Scope

This “limited warranty for pv modules” as set forth herein is expressly in lieu of and excludes all other express or implied warranties, including but not limited to warranties of merchantability and of fitness for particular purpose, use, or application, and all other obligations or liabilities on the part of Musina, unless such other obligations or liabilities are expressly agreed to in writing signed and approved by Musina. Musina shall have no responsibility or liability whatsoever for damage or injury to persons or property, or for other loss or injury resulting from any cause whatsoever arising out of or related to the modules, including, without limitation, any defects in the modules, or from use or installation.

Under no circumstances shall Musina be liable for incidental, consequential or special damages, howsoever caused. Loss of use, loss of profits, loss of production, and loss of revenues are specifically and without limitation excluded.

Musina’s aggregate liability, if any, in damages or otherwise, shall not exceed the invoice value as paid by the customer, for the single unit of module.

5. Obtaining Warranty Performance

If the customer has a justified claim covered by this “Limited Warranty of PV Modules”, an immediate notification shall be filed in writing to (a) the vendor or (b) Musina’s authorized distribution partner, who supplied affected modules, or (c) Musina office. Together with the notification, the customer should enclose the evidence of the date on which the modules have been purchased. If applicable, the vendor or distributor will give advice on the processing of the claim. If more assistance is required,

the customer may request guidance from Musina in writing. The return of any modules will not be accepted unless prior written authorization has been given by Musina.

Obtain Musina customer service:

- E-mail: musina@gamtechsrl.it
- Website: www.musina-h2.com

6. Disputes

In any form, in the event of a dispute that has occurred for more than one year, the customer shall not make any dispute regarding this limited warranty.

7. Various

The repair or replacement of the modules or the supply of additional modules, does not cause the beginning of new warranty terms, nor shall the original terms of this “Limited Warranty of PV Modules” be extended. Any replaced modules shall become the property of Musina for their disposal. Musina has the right to deliver another type (different in size, color, shape and/or power) in case Musina has discontinued producing the replaced modules at the time of the claim.

If the customer purchased module is not listed in “Limited Warranty of PV Modules”, customer may contact Musina for more information on the applicable warranty.

8. Force Majeure

Musina shall not be responsible or liable in any way to the customer or any third-party arising from any non-performance or delay in performance of any terms and conditions of sale, including but not limited to any technical and substantive events or environmental conditions that cannot be reasonably foreseen and understood in the event of the sale of PV modules or claims, due to natural disasters, war, riots, strikes, etc. cannot get appropriate and adequate labor, materials, mold, production capacity, technology; or any other similar cause or circumstance beyond the reasonable control of Musina. In such cases, performance by Musina of this Limited Warranty shall be suspended without liability for the period of delay reasonably attributable to such causes.

Nominal Power Output in product datasheet is the power in Watt peak that a Photovoltaic Solar Modules generates in its Maximum Power Point under Standard Testing Conditions (STC). STC are as follows:

- 1) light spectrum of AM 1.5
- 2) an irradiation of 1000 W per m²
- 3) a cell temperature of 25 degrees centigrade at right angle irradiation.

The measurements are carried out in accordance with IEC 61215 as tested at the connectors or

junction box terminals – as applicable – per calibration and testing standards of Musina valid at the date of manufacture of the PV-modules.