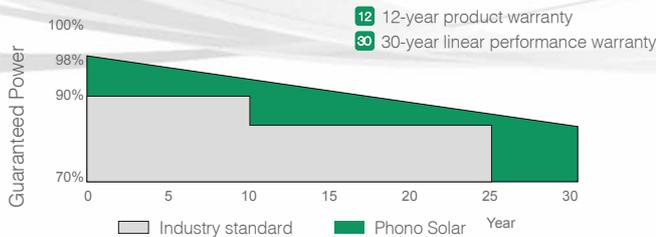


# Phono<sup>®</sup> Solar

## MWT Module

### Poly-perc/295-310W

- 20W** Higher Efficiency  
20W+ higher rated power more than common module
- 3%** Higher Generation  
3% higher power generation on the same installation
- \$** Lower Cost  
BOS cost can be reduced by 1.2-1.5 USD cent/w
- ◆** Better reliability and Stability  
Lower degradation and higher generating capacity ensure better module performance
- ⊕** Wider Technical Compatibility  
MWT can be combined with most existing manufacturing process and technologies



**Bloomberg** Tier1  
NEW ENERGY FINANCE

**TOP PERFORMER**  
2018  
DNV-GL  
PV MODULE RELIABILITY SCORECARD

**TOP PERFORMER**

**60**  
Cells



EN EN-20190221

## ELECTRICAL TYPICAL VALUES

Model	PS295P-20/UM	PS300P-20/UM	PS305P-20/UM	PS310P-20/UM
Type	Polycrystalline 6 inch x 6 inch square, 6 × 10 pieces in series			
Rated Power (Pmpp)	295W	300W	305W	310W
Tolerance	0~+5w			
Rated Current (Impp)	9.40	9.50	9.60	9.69
Rated Voltage (Vmpp)	31.40	31.60	31.80	32.00
Short Circuit Current (Isc)	9.90	9.98	10.06	10.14
Open Circuit Voltage (Voc)	38.80	39.00	39.20	39.40
Module Efficiency (%)	18.13	18.44	18.75	19.05
NOCT (Nominal Operation Cell Temperature)	43.±2°C			
Voltage Temperature Coefficient	-0.28%/°C			
Current Temperature Coefficient	+0.06%/°C			
Power Temperature Coefficient	-0.36%/°C			

## MECHANICAL CHARACTERISTICS

Length (Lx W x H)	Length: 1640mm (64.57 inch)
Dimension (Lx W x H)	Width: 992mm (39.06 inch)
	Height: 35mm (1.38 inch)
Weight	18.5kg (40.79 lb)
Front Glass	3.2mm toughened glass
Frame	Anodized aluminium alloy
Cable	4mm <sup>2</sup> (IEC) , Length:900mm or Customized length
Junction Box	IP 67 rated

## ABSOLUTE MAXIMUM RATING

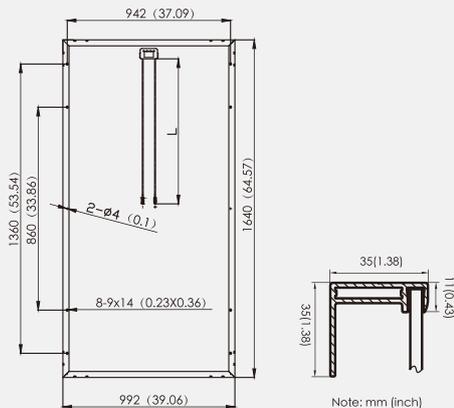
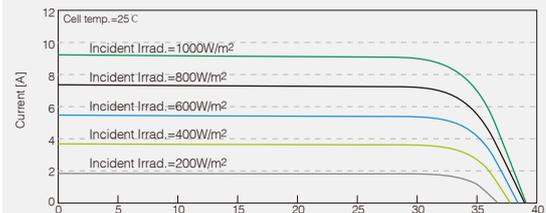
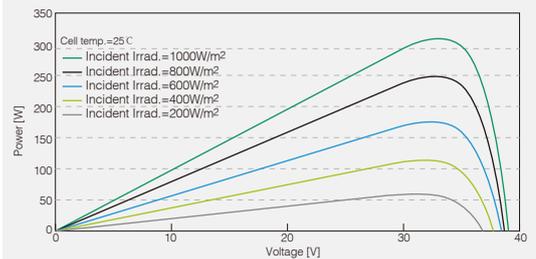
Parameter	Values
Operating Temperature	From -40 to +85°C
Hail Diameter @ 80km/h	Up to 25mm
Surface Maximum Load Capacity	Up to 5400Pa
Maximum Series Fuse Rating	15A
IEC Application Class (IEC61730)	A
Fire Rating (IEC61730)	C
Module Fire Performance (UL 1703)	Type1
Maximum System Voltage	DC 1000V (IEC)

## PACKING CONFIGURATION

Container	20' GP	40' HQ
Pieces/Container	312	896

1. In compliance with our warranty terms and conditions.
2. Measurement conditions under irradiance level of Standard Test Conditions(STC): 1000W/m  
Air mass 1.5 Spectrum, cell temperature of 25°C.

## ELECTRICAL CHARACTERISTICS



Note: mm (inch)



**Phono<sup>®</sup> Solar**

**Note:** This datasheet is not legally binding. Phono Solar Technology Co., Ltd. reserves the right to adjust specifications without notice. Further information please refer to our [Website:www.phonosolar.com](http://www.phonosolar.com), [E-mail:info@phonosolar.com](mailto:info@phonosolar.com)

# CERTIFICATE

**TÜV NORD CERT GmbH**  
herewith declares that

**Phono Solar Technology Co., Ltd.**  
No. 1 Xinghuo Rd, Nanjing Hi-tech Zone  
Nanjing City, Jiangsu Province, 210032  
P.R. China

is authorized to provide the product mentioned below with the mark as illustrated:

**Description of product (details see Annex 2):**

**PV Modules with 6" Poly-crystalline MWT Solar Cells**

Tested according to: IEC 61215-1:2016;  
IEC 61215-1-1:2016;  
IEC 61215-2:2016;  
IEC 61730-1:2016;  
IEC 61730-2:2016.

Registered No.: 44 780 19 406749 - 130  
Manufacturer: see Annex 1  
Test Report No.: 492010964.003  
File No.: SHV03059/19



Valid from: 2019-05-08  
Valid until: 2022-11-23



TÜV NORD CERT GmbH  
Certification Body  
Consumer Products



Essen, 2019-05-08

Please also pay attention to the information stated overleaf.





## Zertifikat 2017\*

PV CYCLE Deutschland GmbH  
erklärt hiermit, dass basierend auf der geltenden Vereinbarung

### **Sumec Europe GmbH**

Mitglied von PV CYCLE Deutschland GmbH ist.  
PV CYCLE Deutschland GmbH ist eine Vereinigung, die für ihre  
Mitglieder die Sammlung und das Recycling von PV- Altmodulen in Deutschland organisiert.

[www.pvcycle.org](http://www.pvcycle.org)

Jan Clyncke  
Geschäftsführer

A handwritten signature in blue ink, appearing to read "Jan Clyncke", with a horizontal line extending to the right.

Düsseldorf,  
22/03/2017

\* Die Gültigkeit dieses Zertifikats kann ausschließlich unter [extranet.pvcycle.org](http://extranet.pvcycle.org) mit der Attestnummer 8586d066 abgerufen werden.

# Limited Warranty for MWT PV- Modules (Version EN-W-MWT-2019-V1)

Phono Solar MWT PV Modules with the Model Names covered under this warranty are:

## Polycrystalline Products

PSXXXP-20/UM (XXX=265~310W, in increments of 5)

PSXXXP-24/TM (XXX=315~370W, in increments of 5)

## Monocrystalline Products

PSXXXM-20/UM (XXX=280~325W, in increments of 5)

PSXXXM-24/TM (XXX=330~390W, in increments of 5)

Phono Solar MWT PV Modules (hereinafter the “Product”) in this Warranty means the MWT PV Module(s) delivered by Phono Solar Technology Co., Ltd. (hereinafter the “Phono Solar”). The Phono Solar warrants its Product(s) in compliance with the terms and conditions as stipulated below.

The Customer in this Warranty means the individual person or company who purchases Phono Solar Product.

This “Limited Warranty for MWT PV-Modules” is valid for MWT Solar Modules delivered from Phono Solar since **November 1<sup>st</sup> 2017**.

## 1. Limited Product Warranty –Repair or Replacement

### Twelve (12) years

Phono Solar warrants that the Product including factory-assembled DC connectors and cables, if any, will be free from defects in material and workmanship under normal application, installation, operation, and use and service conditions. If Product fails to conform to this warranty, within a period of ten (12) years from the date of delivery by Phono Solar to its first buyer, Phono Solar will, at its sole discretion, either repair the defective Product(s) at no charge; or replace the defective Product(s) or part thereof by a new or remanufactured equivalent at no charge, within the above specified period. This repair or replacement remedy shall be the sole and exclusive remedy provided under the “Limited Product Warranty” and shall not extend beyond the ten (12) years period set forth herein.

This “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 Linear Peak Power Warranty - Limited Remedy

### Thirty (30) years

The DC power of a product shall be tested under standard test conditions which are: light intensity 1000 W/m<sup>2</sup>, temperature 25°C, and AM 1.5. The buyer must ensure to properly handle, transport, design the system of, install, use, and keep appropriate environment and maintenance for the products.

For **Monocrystalline Products**: within the first year from the date of installation and normal operation, the output power shall not be less than 97.5% of the product's minimum output power as set forth in the specifications. Within the second year, the output power shall not be less than 96.8% of the product's minimum output power as set forth in the specifications. Afterwards, 0.6% maximum decrease per year. After 30 years, the product's output power shall not be less than 80.00% of its minimum output power as set forth in the specifications.

For **Polycrystalline Products**: within the first year from the date of installation and normal operation, the output power shall not be less than 98% of the product's minimum output power as set forth in the specifications. Within the second year, the output power shall not be less than 97% of the product's minimum output power as set forth in the specifications. Afterwards, 0.6% maximum decrease per year. After 30 years, the product's output power shall not be less than 80.2% of its minimum output power as set forth in the specifications.

### 3. Exclusions and Limitations

- (1) In any event, all warranty claims must be received within the applicable warranty period for this warranty to be effective.
- (2) The "Limited Product Warranties" and the "Limited Linear Peak Power Warranties" do not apply to any Product(s) which have been subjected to:
  - Misuse, abuse, neglect or accident;
  - Alteration, improper installation or application;
  - Non-observance of Phono Solar's installation manual;
  - Impairments caused by external effects, such as e.g., dirt stains, smoke, damages caused by salt, by chemicals not explicitly authorized for use, e.g. for cleaning. Repair or modifications by someone other than an approved service technician of Phono Solar;
  - Power failure surges, lightning, flood, fire, accidental breakage or other events out of Phono Solar's control;
  - Caused by external events including but not limited to defective equipment parts, appliances, system components like, connecting cables, invertors, or the like, which have been coupled with the Module by anyone other than Seller, or caused by defective system design, configuration, or installation planning;
  - Removal of Modules and reinstallation at a new site;
  - Installation on mobile platforms or in a marine environment; direct contact with corrosive agents or salt water; pest damage; or malfunctioning system components;
  - Alteration, removal or obliteration of the original Module label;
  - Other events that are reasonably beyond the control of Phono Solar.
- (3) Both the "Limited Product Warranties" and "Limited Peak Power Warranties" do not cover any costs associated with installation, removal or re-installation of the PV-modules and (except as explicitly set forth in the final paragraph of Section 5) customs clearance or any other costs for return of the Product(s); .
- (4) Both the "Limited Product Warranties" and "Limited Peak Power Warranties" do not cover cosmetic blemishes

associated with installation, or the normal wear and tear of Phono Solar Modules.

#### 4. Limitation of Warranty Scope

These warranties as set forth herein are expressly in lieu of and exclude all other warranties of any kind whatsoever, whether express or implied, including but not limited to warranties of merchantability, of fitness for particular purpose, use, or application, of non-infringement and all other obligations or liabilities on the part of Phono Solar, unless such other obligations or liabilities are expressly agreed to in writing signed and approved by Phono Solar to the broadest extent permitted by law.

Phono Solar 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 Product(s), including, without limitation, any defects in the Product(s), or from use or installation. Under no circumstances shall Phono Solar be liable for any special punitive, incidental, or consequential damages, howsoever caused, including but not limited to loss of use, loss of profits, loss of production, or loss of revenues, arising, directly or indirectly from the sale or use of any Product(s), whether such claim is based on warranty, contract, negligence, strict liability or otherwise, Phono Solar'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 Product(s) involved. The rights and limitations herein shall leave unaffected any legal rights existing under mandatory applicable laws.

#### 5. Obtaining Warranty Performance

If the Customer has a justified claim covered by this "Limited Warranties for PV Modules", an immediate notification directly to Phono Solar shall be filed by mailing a registered letter in writing to the address of Phono Solar listed hereunder, or by, sending an email letter to the email account of Phono Solar Service Center listed hereunder as soon as becoming aware of the circumstances which constitute a warranty case. Together with the notification, the Customer should enclose the following information:

- The necessary contact information of the Customer, including its name, address, telephone, email, etc.,
- The corresponding serial number of the Product(s)
- The date on which the Product(s) have been delivered and installed
- The pictures of the defective Module which show the defect and/or the pictures which show the shadowing situation at the installation location

The timely receipt of the notification by Phono Solar shall be decisive.

The return of any PV-modules will not be accepted unless prior written authorization for the return and evaluation of the claimed defect has been given by Phono Solar. To the extent necessary for processing the return request Phono Solar or its authorized person shall be given commercially reasonable access to the Product(s) for inspection and analysis of the claimed defect. In connection with both the "Limited Product Warranties" and "Limited Peak Power Warranties", Phono Solar shall reimburse Customer for reasonable, customary and documented transportation charges by sea freight for both the return of the Product(s) and reshipment of any repaired or replaced Product(s), only if this cost is authorized by Phono Solar customer service department.

## 6. Severability

If a part, provision or clause of this "Limited Warranty for PV-Modules", or the application thereof to any person or circumstance, is held invalid, void or unenforceable, such holding shall not affect and shall leave all other parts, provisions, clauses or applications of this "Limited Warranty for PV-Modules", and to this extent such other parts, provisions, clauses or applications of this "Limited Warranty for PV-Modules" shall be treated as severable.

## 7. Disputes

In case of any discrepancy in a warranty-claim, a first-class international test-institute such as Fraunhofer ISE in Freiburg/ Germany, TÜV Rheinland in Cologne/ Germany or ASU Arizona State University shall be involved to judge the claim finally. All fees and expenses shall be born by the losing party, unless otherwise awarded. The final explanation right shall be borne by Phono Solar.

## 8. Various

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

## 9. Warranty Transfer

This warranty is transferable from the original Customer to any assignee and remains in effect for the time period remaining under the limited warranties, provided the Product remains installed in its original location at the warranty registration.

## 10. Force Majeure

Phono Solar 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 this "Limited Warranty for PV-Modules ", due to acts God, war, riots, strikes, warlike conditions, plague or other epidemics, fire, flood, or any other similar cause or circumstance beyond the reasonable control of such Phono Solar. In such cases, performance by Phono Solar of this Limited Warranty shall be suspended without liability for the period of delay reasonably attributable to such causes.

1 "Peak Power at STC" is the power in Watt peak that a PV- Module generates in its Maximum Power Point.

"STC" are as follows:

Light spectrum of AM 1.5, (b) an irradiation of 1000 W per m<sup>2</sup> and (c) a cell temperature of 25 degree 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 Phono Solar valid at the date of manufacture of the PV-modules. The power output shall be measured by a laboratory approved by Phono Solar.

**Contact**

PHONO SOLAR TECHNOLOGY CO., LTD.

Address: No. 1 Xinghuo Rd., Nanjing Hi-tech Zone, Nanjing, China

Tel: 86 25 5863 8000

Fax: 86 25 5863 8009

Web: <http://www.phonosolar.com>

Email: [support@phonosolar.com](mailto:support@phonosolar.com)