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Note: This datasheet is not legally binding. Phono Solar reserves the right to make specifications changes without notice. Further information can be found on our website: www.phonosolar.com
In Search of Remarkable

NOT COMPROMISING
NOT MEDIocre
NOT IGNORED

Member of SUMEC Group
Phono Solar Technology Co., Ltd., was founded by SUMEC Group Corporation, a member of the China National Machinery Industry Corporation (SINOMACH). Phono Solar is a leading brand in the new energy industry, providing high quality new energy products since 2004.

Driven by both innovations in technology and an effective brand strategy, Phono Solar continuously extends the industry chain downstream and has realized moderate horizontal expansion. This has been achieved through cutting-edge applications of technology including on/off-grid systems and smart micro-grid systems and also through the successful implementation of PV power plant investments, construction and operations globally.

The Phono Solar brand has become synonymous with high performing, top quality photovoltaic modules and specializes in PV technology innovation, application and system development. The company is a KEY COMPONENT SUPPLIER, SYSTEM INTEGRATOR and PROJECT DEVELOPER.

Phono Solar’s worldwide sales and marketing network and service system effectively provides end-users with accessible clean energy, whilst promoting its core brand values of STABILITY, RELIABILITY and CREATIVITY.

Company Overview

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Leading Manufacturing

Phono Solar focuses on the manufacture of solar modules and selects only the highest quality materials and components. This, together with a world leading automated production line enables us to offer a competitive price for our modules. Our experienced engineers are committed to this round-the-clock operation and ensure each module, from soldering to packaging, flows smoothly along this world-class assembly line.
Awarded Tier 1 in the PV module manufacturer grading system of the internationally recognized Bloomberg New Energy Finance (BNEF).
Rigorous Testing
Phono Solar owns a world leading PV testing centre, qualified by several international certification authorities. A broad range of equipment is used to conduct quality-control tests, product certifications, material reliability checks, and in-depth research. Up to 35 different tests can be run uninterrupted 24 hours a day, to higher standards than both IEC and UL. A 100% testing ratio for visual inspection, EL testing, pressure testing, mechanical load testing and age testing ensures that Phono Solar modules operate safely and smoothly for at least 25 years, therefore guaranteeing a strong and stable return on investment for investors.

- Environmental Reliability Testing
  We put a selection of PV modules through extreme environmental testing to ensure reliability and superior performance in even the world’s most unforgiving conditions.
  - UV Preconditioning
  - Surface Impact
  - Corrosive Atmospheres
  - Hotspot Endurance
  - Insulation (wet and dry)
  - Thermal Cycling
  - Wet Leakage
  - Damp Heat
  - Mechanical Load
  - Highly Accelerated Stress
  - Humidity Freeze
  - Outdoor Exposure

Experienced Products
The best way to verify solar module reliability is to observe its performance in a power plant. Modules must be able to withstand any external environmental factors and resist all types of natural stress as these both ultimately affect the power plant’s performance and investment IRR.

Phono Solar can give customers real examples to prove product reliability. In Czech Republic, both Veprek and Smirice power plants use Phono Solar modules. Grid connected since 2010, the power plants have exceeded their expected electricity generation by over 15%.

- Anti-PID
- Certified to withstand increased loads of up to 5400Pa
- Ammonia corrosion resistance
- Blowing sand resistance

Insured Warranty
We provide customers with a 25-year warranty and liability insurance from a world-renowned insurance company to ensure your PV investment is secure.

- 25-year Warranty
- Public Liability and Products Liability Insurance
- Manufactures Errors & Omissions Insurance

Research & Development
We strive to develop products and optimize our business model to meet growing and changing market demands. We are committed to developing highly efficient and affordable new energy products in both technologically and commercially innovative ways, and to offering flexible services to achieve success with our customers.

- Target
- System Efficiency
- Energy Cost

- Focus
- Cells and Modules
- Black Silicon
- PV System PR
- Storage Systems

- Partners
- Southeast University
Super Isolation
multi-layer structure, against 21kV Hi-Voltage breakdown test
extremely low water absorption & permeability
ensure its perfect performance in damp circumstance

Better Durability
withstand fire/dust/UV/tear tests
ensure its long durability in practical application scenarios

Higher Transmittance
Higher Than Common Glass 12%
Lower Reflection
Lower Than Common Glass 30%
Impact Resisted
Pressure Resisted
Sand Resisted
Self-Cleaning

Top Class Materials
Ultra Clear AR Coating Tempered PV Glass
Higher Transmittance
Higher Than Common Glass 12%
Lower Reflection
Lower Than Common Glass 30%

High Efficiency PV Cells
Higher Efficiency
η ≥ 22.00%

EVA
Higher Transmittance >91%

Larger Durability
No Delamination
No Yellowing

Connector & Junction box
Durability
Innovative full-glue-filled junction box
Outstanding sealability

Back Sheet
Super Isolation
multi-layer structure, against 21kV Hi-Voltage breakdown test
extremely low water absorption & permeability
ensure its perfect performance in damp circumstance

Better Durability
withstand fire/dust/UV/tear tests
ensure its long durability in practical application scenarios

Frame
Durability
120N Serrated-clip
design	
tensile strength
110%
Seal-tip design
glue injection

User-friendly
16 drain holes
drain away water
effectively
Black/silver
optional

IP68 waterproofness
4mm² qualified cable
500N tensile strength
Top Brands
top-level accessories

Top Brands
Ultra Clear AR Coating Tempered PV Glass
High Efficiency PV Cells
Top Sheet

Impact Resisted
Pressure Resisted
Sand Resisted
Self-Cleaning

Top Sheet

Top Sheet

Top Sheet

Top Sheet

Top Sheet

Top Sheet

Top Sheet

Top Sheet

Top Sheet

Top Sheet
Excellent Performance

**THERMAL CYCLING TEST**
- Temperature: -40 to 90°C
- Cycles: 800

*4 Times Higher Than IEC Standard*

Thermal Cycles Test ensures the modules and its components can withstand the outdoor-exposure for more than 20 years of seasons changing.

**DAMP HEAT TEST**
- Temperature: 85°C
- Humidity: 85%
- Period: 3000hrs

*3 Times Higher Than IEC Standard*

Working in hot and humid environment for long time, modules and its components such as EVA and back sheet, are subjected to high temperatures moisture erosion.

Good heat-resistant modules can generate more power and maintain its high effectiveness in the tropical and rainy region, while ensuring safety as well.

**HUMIDITY-FREEZE TEST**
- Temperature: 85°C
- Humidity: 85%
- Soak: 21hrs
- Frozen: -40°C
- Cycles: 30

*3 Times Higher Than IEC Standard*

Being exposed outdoor in rain and snow during winter is a enormous challenge for modules. Moisture will penetrate into the pores on the glass surface, which will corrode the modules.

Good moisture and freezing resistant modules can survive and operate longer.

**UV EXPOSURE TEST**
- Temperature: 60°C
- UV Irradiance: 90KWh/m²

*6 Times Higher Than IEC Standard*

The high-intensity ultraviolet radiation in sunlight will destroy the molecular chains of organic compounds in the module material and reduce the light transmission together with its mechanical properties, resulting in lower module efficiency and power generation.

Our modules have superior UV resistance, which can prevent yellowing and delamination caused by ultraviolet light.

**PID Test**
- Temperature: 85°C
- Humidity: 85%
- Bias: 600hrs
- Period: -1000V

*3 Times Higher Than IEC Standard*

Potential induced degradation (PID) is a potential induced performance degradation in modules caused by so-called stray currents.

Our modules’ excellent performance in the test, effectively avoid the PID issue for customers.
Worldwide Tested Product

Japan 4.5MW

Jiangsu, China 50MW

Anhui, China 11MW

Germany 6.5MW

Shandong, China 20MW

Anhui, China 40MW

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