Pure solar lightweight modules Installation manual

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1 Purpose of this manual

Firstly, thank you very much for choosing Pure solar PV modules (hereinafter referred to as "modules"). The purpose of this manual is to provide users with information on how to use Pure solar modules correctly.

The installation and construction team must read and understand the content of this manual before installation. If there are any questions, please contact the technical department of our company to obtain more information. During the installation process, the construction team must comply with the safety precautions in this manual and local lows and regulations.

Please keep this manual properly for future reference (maintenance and care) or for the possible sale or disposal of the modules.

1.1 Applicable products

This manual applies to this following series of module products:

Type 1	PURES-XXX-EWXX、PURES-XXX-EBXX、PURES-XXX-PWXX、PURES-XXX-PBXX
Type 2	PURES-XXX-F1MA、PURES-XXX-F6MA、PURES-XXX-F8MA
Type 3	PURES-XXX-F1MB、PURES-XXX-F6MB、PURES-XXX-F8MB
Type 4	PURES-XXX-F1MC、PURES-XXX-F6MC、PURES-XXX-F8MC
Type 5	PURES-XXX-F1MD、PURES-XXX-F6MD、PURES-XXX-F8MD
Type 6	PURES-XXX-F1MX、PURES-XXX-F6MX、PURES-XXX-F8MX

2 Safety

1.2 General safety rules

- The module application level is A level, which can operate in systems with a design total access capacity of more than 50V DC or 240W. The module meets the relevant safety standards in IEC 61730 and IEC 61730-2, and meets the requirements of safety level Ⅱ under this application level.
- The module should be properly grounded according to the requirements in this guide or national electrical specifications.
- Installation of the module must be carried out by personnel with relevant qualifications, and the electrical connections must be operated by licensed electricians and comply with local laws and regulations.
- The installation personnel may be exposed to the risk of injury during the installation process, including but not limited to the risk of electric shock.
- A single module may generate a voltage of more than 30V under direct sunlight, and contact with a voltage of more than 30V may pose potential danger.

- The module is designed for outdoor use and can directly convert solar energy into DC power. The module can be installed in different locations such as the ground, roof, vehicles, or ships, and the responsibility of designing a reasonable support structure lies with the system designer and installer.
- Do not use mirrors or magnifying glasses to focus sunlight on the module. When installing the module, local laws and regulations at the local and national levels must be followed, and building permits may also be required if necessary.
- Use only equipment, joints, cables and supporting brackets that are compatible with the module.
- Do not use corrosive chemicals to wipe the module.

2.2 Handling safety

- Do not lift the module by grasping the module junction box or cable.
- Do not walk or place heavy objects on the module.
- Do not throw the module or allow objects to fall on the module.
- Be careful and handle the module gently during the process of moving., transporting and installing the module.
- Do not paint the surface of the module.
- Do not scratch or hit the backsheet of the module.
- Do not tear the backsheet or front film of the module, which may cause electric shock.
- Unless appropriate protective measures have been taken, do not handle the module in humid conditions.
- Before installation, do not expose the module to direct sunlight to avoid unnecessary attenuation.
- Ensure that the module is not subjected to severe vibrations during all handling and transportation processes, as vibrations may cause hidden cracks in the solar cells inside the module or damage the module.

2.3 Installation safety

- The installation work should follow IEC standards and electrical installation safety standards.
- Do not disconnect the module connection with the load.
- Do not touch the conductive parts of the module, as it may cause electric sparks, burns and fatal electric shocks.
- If not necessary, do not touch or step on the module during the installation process.
- Do not install it in rain, snow or windy weather.
- Do not expose the assembly to artificial light and use opaque materials to completely cover the surface of the components during installation to prevent the generation of electric current.
- Do not wear metal rings, watchbands, ears, nose, lip rings or other metal items during installation and maintenance.
- Use only installation tools that are allowed for electrical installation operations.

- Observe the safety regulations for all other system accessories, including cables, connectors, load regulators, inverters, batteries, charging battery etc.
- Under ordinary outdoor conditions, the current and short circuit current generated by the components may differ from the data in the product parameter table. When designing the system, the current and short circuit current should be multiplied by the factor of 1.25 for the selection of other accessories.
- Using only a connector compatible with the component connector, removing it without prior authorization will result in a warranty clause.
- Do not remove the installed components to other items, which may cause warranty failure.
- Do not install the components within 500m of the shoreline. When installed at 500 to 1000m, system components resistant to salt spray must be used.

2.4 Fire prevention and safety

- The fire rating of the components is only valid for complete compliance with this manual.
- Please consult relevant local authorities to obtain fire safety guidelines and requirements related to construction engineering.
- Do not use components near equipment or locations that may produce combustible gas.
- Compliance with local laws and regulations while installing the components.

3 Products identification

Each component has two to three barcode stickers and possesses a unique serial number and a nameplate sticker.
Barcode 1: Laminated inside the component.
Barcode 2: Pasted on the back of the component.
Nameplate: Pasted on the back of the component, which contains various parameter characteristics of the component.
Please check whether the serial number on the barcode matches the package list when you need Pure Solar to provide for a specific component, please provide your component serial number.

4 Installation scheme

4.1General installation scheme

- Adhesive and double-sided tape installation methods are used for general roofs, vehicles, ships and factory color steel tiles.
- It is recommended to use components of the same size and specification in the same photovoltaic array.
- The component should be installed at a sufficient height to keep it away from potential obstructions, flying sand, snow and water.
- It is recommended to install the component at an inclination angle of at least 10 degrees

to ensure that dust can be easily washed off.

- It is recommended to reserve at least 10 cm of space between the components to prevent material expansion and contraction due to temperature changes. The components shall be properly installed according to the corresponding mechanical load requirements.

4.2 Selection of installation position and angle

We recommend installing the component in a place with abundant sunlight. In the northern hemisphere, the component should generally face south, while int the southern hemisphere, it should generally face north. The optimal installation angle of the component will vary according to different latitudes. Please consult experts with the corresponding knowledge when determining the installation position and angle.
When selecting a location for installation, please avoid trees, buildings or obstacles that may cast shadows on the component. Shadows can cause hot spots and power generation losses. Even if the factory configures a bypass diode in the component, it can only reduce but not avoid this loss.
Do not install the component near open flames or flammable materials.
Do not install the component in a place that may be flooded or constantly sprayed with water or sprinklers.

4.3 Installation methods ⅰ

As a special construction roof, factory color steel roof is used as an example here.

4.3.1 Clean the Installation Surface

The installation plan for lightweight components uses a pasting scheme. Before installation, the installation surface must be clean to ensure installation effectiveness.

4.3.2 Apply Glue

On the clean wave crest platform of the color steel tile, use a glue gun to evenly cover it with polyurethane sealant (as shown below); and ensure that the environment before installation is clean to make the component not stick to other objects.

4.3.3 Paste the Component

When pasting the component, do not distort it. Two people should hold the component's conners and gradually stick it from one end to the other in the direction of the component's length, as shown in the figure, ensuring it is level and vertical and avoiding secondary sticking. (Note: reserve a 500-800mm construction and maintenance channel in the array and construct within this area.)

Use a roller to gently roll the component surface to ensure that it is firmly attached. The overall installation effect is as shown in the figure.

4.5 Electrical Installation

⚠Warning: Electric shock hazard
The component will generate electricity when exposed to light. Please observe all applicable electrical safety measures.

- Only qualified personnel can install or maintain the components.
- Pay attention to high voltage danger during component connection.
- Do not damage or scratch the front and back of the component.
- Do not move or install the component when it is wet.

The cable accessories used must be compatible with the component.

Components connected in series have the same current, and the open circuit voltage of each string must not be higher than the maximum system voltage (refer to the maximum system voltage indicated on the back of the component nameplate). When calculating the open circuit voltage of the string., the temperature coefficient and the effect of the extreme lowest temperature at the installation site must be considered.

Components connected in parallel have the same voltage. When calculating the short-circuit current of the array, the temperature coefficient and the effect of the extreme highest temperature at the installation site must be considered.
Refer to local regulations to determine the size and temperature of the system cables.

The cross-sectional area of the cable and the capacity of the connector must meet the requirements of the maximum short-circuit current of the photovoltaic system (for a single component, we recommended a cable cross-sectional area of 4 MM^2 and a connector with a rated current greater than 15A), otherwise the cable and connector will overheat due to high current. Note: the temperature limit of the cable is 85℃ and the temperature limit of the connector is 105℃.

Consult a qualified system designer or integrator for advice. Generally, the project needs to obtain a building permit and inspection and approval from local authorities.

4.6 Grounding

All metal fittings associated with the component system need to be grounded and the metal roof that is glued to the component needs to be grounded.
The component itself does not need to be grounded because it does not have exposed metal. Please refer to local and national safety and electrical regulations for the required grounding and connection requirements. If grounding is required, provide recommended type of connectors or equivalent equipment for the grounding wire.

5. Maintenance

Regularly clean the glass surface of the module with clean water and a sponge or cloth. Stubborn dirt can be removed with a mild, non-abrasive cleaner. It is not recommended to clean the module with water that contains minerals. Check the electrical, grounding and mechanical connections every six months to ensure that they are clean, safe undamaged and not corroded. If any problems occur, consult a professional.
Note: Read the descriptions of all components used in the system, such as brackets, adjusters, inverters and batteries carefully.