

TF Flexibe Solar Panel

Installation Manual

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1.0 Summary

This manual provides important safety instructions for the installation, maintenance and use of the TF Series solar modules. Users and installers must read it carefully and follow it to the letter. Failure to follow these safety guidelines may result in injury or property damage. Installation and operation of solar modules requires specialized skills and should only be performed by professionals. Please read the safety and installation instructions before using and operating the modules. The installer must inform the end customer (or consumer) accordingly.

The term "module" in these instructions refers to one or more TF Series solar modules. Please retain these instructions for future reference.

1.1 Disclaimer

Manufacturer reserves the right to change this installation manual without prior notice. Manufacturer makes no warranty of any kind, either express or implied, with respect to the information contained in this manual. Customer's failure to follow the requirements outlined in this manual during installation of components will void the limited warranty on the product provided to the customer.

1.2 Responsibility

Manufacturer is not responsible for injuries of any kind, including, but not limited to, bodily injury, injury and property damage arising from the operation of components, installation of systems and whether or not the instructions in this manual are followed.

2.0 Security precautions



Warning: Read and understand all safety specifications before installing, wiring, operating, and/or maintaining the assembly. When the assembly is exposed to sunlight or other light sources, direct current is generated. Direct contact with live parts of the assembly, such as terminals, whether or not the assembly is connected, may result in injury or death.

General safety rules

All installation work must fully comply with local and regional codes and the appropriate national or international electrical standards.

Please use insulated tools to reduce the risk of electric shock.



Use appropriate protective measures (non-slip gloves, work clothes, etc.) to avoid direct contact between personnel and 30V DC or higher voltages.



Please do not wear metal ornaments during installation to avoid poking through the components and causing electric shock hazard.



If solar modules are installed or operated during rain, strong winds, or dewy mornings, appropriate protective measures are required to avoid injury to components and personnel.



Do not allow children or unauthorized personnel to approach the installation area or component

storage area.

If the circuit breaker and overcurrent protection circuit breaker cannot be opened or the controller cannot beTM turned off during assembly installation or wiring, cover the array assembly with an opaque material to stop the power output.

- Do not use or install components that have been damaged.
- Do not attempt to repair any part of the component; there are no user-available components within the component.
- The lid of the junction box should be kept closed at all times.
- Do not split the component or move any part of the component.
- Do not connect or disconnect components when current or external current is present in the component.

Fire Safety

- Consult your local department for guidance and requirements regarding installation or building fire safety.
- Penthouse construction and installation may affect the fire safety of the building; improper installation may result in a fire hazard.
- Use equipment such as ground fault interrupters and fuses when required by your local department.
- Do not operate the panel in an environment where flammable gases may be generated or near the equipment.

3.0 Electrical Properties

The rated electrical performance data of the modules were measured under standard test conditions (STC) at an irradiance of 1kw/m², AM1.5, and a cell temperature of 25°C. The specific electrical performance parameters for the TF series solar modules in this installation manual. The main electrical performance parameters under STC conditions are also indicated on the nameplate of each module.

In some cases, modules may produce currents or voltages that are greater than the optimum operating current or voltage for their standard test environment (STC). To determine component ratings and load values, multiply the component open-circuit voltage and short-circuit current under STC by 1.25. When determining the appropriate wire and fuse sizes, the short-circuit current needs to be multiplied by an additional 1.25, while the open-circuit voltage is multiplied by a correction factor, in accordance with local regulations.

4.0 Storage and Unpacking

Preventive measures and general safety rules

- Components should be stored in a dry and ventilated environment.
- Prohibits the handling of components through their leads or junction boxes and should be carried by two or

- more persons holding the components.
- Prohibits overhead component handling.
- Does not allow stacking of components in excess of 10 layers.
- Does not allow you to lift an entire assembly by grasping the junction box or wires.

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Before installing a PV module, check whether the module has been damaged during transport and do not install a damaged PV module. If you find a damaged PV module, please contact Manufacturer in order to get the information you need to file a complaint against the defective PV module.

The surface of a PV module is susceptible to damage and a damaged PV module may affect its performance and safety; do not damage or scratch the surface of the PV module. For your safety, do not disassemble or modify the module in any way, as doing so may affect the performance and safety of the module or even cause irreparable damage, and will void any trial warranty.

5.0 Installation

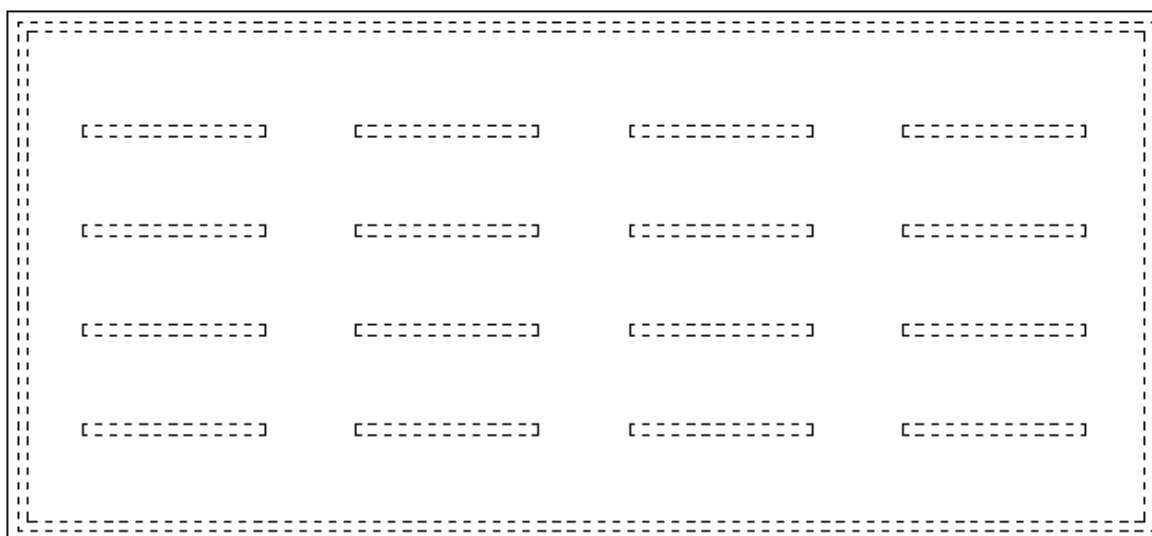
- Modules must not be installed near flames or combustible objects.
- Modules must not be immersed in water (pure or salt water) or in an environment where they are permanently wet (pure or salt water) (e.g., fountains, waves, etc.).
- Do not allow objects (such as installation tools) to be dropped or stacked on the assembly.
- Ensures that the components meet the overall technical requirements of the system.
- Allows connecting components in series to increase voltage or in parallel to increase current. When connected in series, the positive terminal of the component is connected to the next negative terminal. When connected in parallel, the positive terminal of the component is connected to the positive terminal of the next component. The number of bypass diodes provided varies depending on the component type.

Avoiding shadows

Even minimal shading (e.g., dust, bird droppings, tree branches) can cause a drop in power production. A module is considered "shadow-free" if all surfaces are unshaded for the entire year. This ensures that sunlight can reach the module even on the shortest day of the year. When the module is mounted on an RV, avoid shadows from buildings, trees, etc. when parking. Frequent shading of the modules will cause EVA deterioration and continuous heating of the cells may result in the modules being destroyed and rendered unusable.

General Installation

Gluing installation



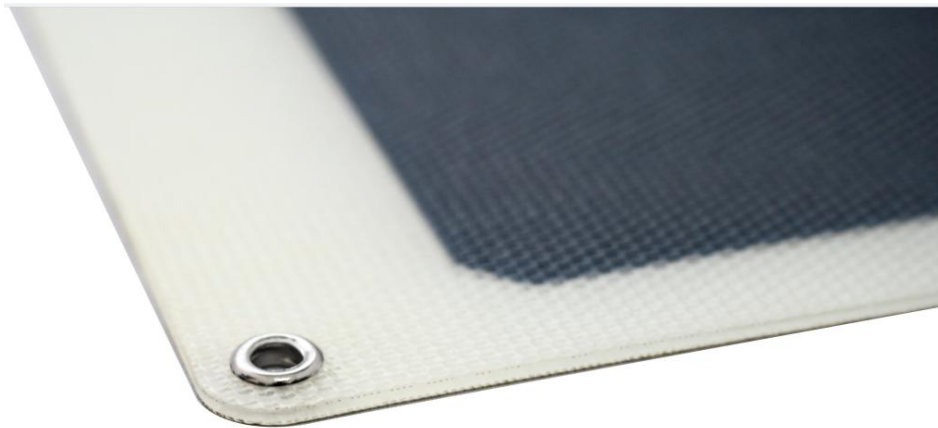
Before installation, the solar module backsheet and the surface to be installed must be clean, and polyurethane sealant is recommended for bonding. The solar module is glued to the surface to be installed as shown in the diagram above. The gaps between the solar module and the surface to be installed are then filled with adhesive to prevent water and air from entering, and the adhesive reaches its maximum strength after 48 hours.

Double-sided adhesive

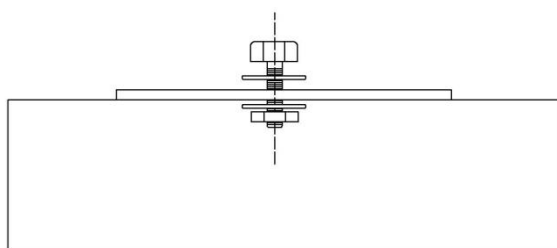


Double-sided adhesive is used for installation, and 3M VHB series double-sided adhesive tape is recommended. The tape is laminated as shown above, and then fixed to the mounting surface.

Screw fixing



The solar module can be fixed by screws and bolts through the eyelet holes on the solar module, and the surface of the installation must be neat, and the solar module must be able to fit on the surface to be installed, and overhanging installation is prohibited.



Each component needs to be fastened by at least 4 points on both long sides.

Use suitable fasteners with corrosion resistant properties. All fastening fasteners (e.g. bolts, elastic washers, flat washers, nuts, etc.) need to be made of stainless steel

5.1 Component Wiring

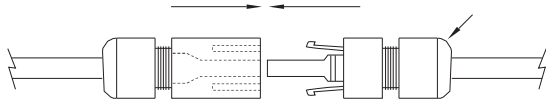
Correct electrical wiring

Check for proper wiring before starting the system. If the measured open circuit voltage (Voc) and short circuit current (Isc) do not match the specifications provided, there may be a wiring fault.

Correct connection of electrical plugs

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- Ensure that the connectors are tight and properly connected. Connectors must not be subjected to external pressure
- Connectors should only be used for circuit connection functions and should not be used to open and close circuits
- Connector connections should be kept dry and clean and protected from rain and moisture. Avoid exposing the connectors to direct sunlight and water immersion.



Connection of MC4 male connector and female connector

5.2 Grounding

Equipment Grounding: Semi-flexible assemblies do not have exposed conductors and therefore do not require grounding per NEC regulations.

The mounting bracket still requires grounding because it is a conductor, so make sure the entire system installation meets local electrical codes and regulations.

6.0 Maintenance

- Do not replace component parts (diodes, junction boxes, connectors, etc.) without permission.
- Routine maintenance measures should be taken to keep the assembly free of snow, bird droppings, seeds, pollen, leaves, branches, dust, stains, etc.
- If the module has a sufficient tilt angle (at least 15°), it is usually not necessary to clean the module (ETFE rainfall will have a self-cleaning effect). If there is a large accumulation of dirt on the module surface, rinse the module array with water without detergent and a gentle cleaning tool (sponge) during the cooler hours of the day. Do not scrape or wipe off dust in dry conditions as this will result in minor scuff marks.
- If there is snow or dust, use a brush with soft bristles to clean the component surfaces.
- The system should be inspected periodically to ensure that wiring and support structures are intact.
- If you require inspection or maintenance of electrical or mechanical properties, it is recommended that a certified and approved professional perform the inspection or maintenance to avoid electric shock or personal injury.