

# **Semi flexible solar panel manual user**

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## 1.0

### Generalization

This manual provides important safety instructions for the installation, maintenance, and use of semi-flexible solar modules. Users and installers must carefully read and strictly adhere to. Failure to follow these safety instructions could result in personal injury or property damage. Installation and operation of solar modules require specialized skills, only professionals can engage in the work. Read the safety and installation instructions before using and operating the components. The installer must inform the end customer (or consumer) of the matter accordingly.

In this specification, "component" refers to one or more EFLX series solar modules. Please keep this manual for future reference.

## 1.1

### Disclaimer

Photonic Universe reserves the right to change this installation manual without prior notice. Photonic Universe makes no warranty of any kind, expressed or implied, contained in this manual. Customer's failure to follow the requirements outlined in this manual during the installation of the component will void the product's limited warranty

## 1.2

### Scope of Responsibility

Photonic Universe is not responsible for any form of injury, including but not limited to component operation, system installation, and whether physical injury, injury, or property damage is incurred in accordance with the instructions in this manual.

## 2.0

### Safety precautions

**WARNING:** Before installing, wiring, operating and / or maintaining the components, read and understand all safety precautions. When the assembly is exposed to sunlight or other light sources, a direct current is generated. The direct contact with the live parts of the module, such as terminals, may result in personal injury or death, whether or not the module is connected.

#### General security rules

- All installation work must be in accordance with local and local codes and the corresponding national or international electrical standards.

Use an insulating tool to reduce the risk of electric shock.



Use appropriate protective measures (non-slip gloves, work clothing, etc.) to avoid direct contact with personnel at 30 VDC or higher.



Do not wear metal ornaments when installing, so as not to puncture the components, causing electric shock hazard.



If components are installed or operated in rainy, strong winds or dewy mornings, appropriate protective measures are required to prevent damage to components and personnel.



Do not allow children or unauthorized persons to access the installation area or component storage area.

If the circuit-breaker and over-current protection circuit-breaker does not turn on or the controller fails to close during component installation or routing, cover the array assembly with opaque material to stop the power output.

Do not use or install damaged components.

Do not step on or place heavy objects on the assembly surface during or after installation of the PV module, as this may cause the battery to crack.



- Do not attempt to repair any part of a component without a user-available component.
- The cover of the terminal box should always be kept closed.
- Do not split the component or move any part of the component.

- Do not connect or disconnect components when a component has a current or an external current.

### 3.0 Mechanical properties / electrical properties

The rated electrical performance data of the module were measured under standard test conditions (STC) at irradiance of 1 kW / m<sup>2</sup>, AM1.5, cell temperature of 25 ° C. Appendix A of this installation manual contains specific electrical specifications for Photonic Universe solar modules. The nameplate of each component is also marked with the main electrical properties under STC conditions.

In some cases, the current or voltage generated by the component may be

Can be greater than its standard test environment (STC) the best working current or voltage. When determining component ratings and load values, the component open circuit voltage and short circuit current at STC should be multiplied by 1.25. When determining the appropriate conductor and fuse size, the short-circuit current must be multiplied by 1.25 in accordance with local regulations, and the open-circuit voltage multiplied by the correction factor.

### 4.0 Storage and unpacking

#### Precautionary measures and general safety rules

·The components should be stored in a dry and ventilated environment.

The components must be shipped in the box supplied with the Photonic Universe and stored in the original box before installation. Please protect the packaging not to

Damaged. Unpack the components in the recommended unpacking steps. Open the packaging,

Transport and storage should be handled with care.

·Do not apply excessive load or twist to components.

- Do not carry the components through the wires or junction boxes of the unit

Shall be carried by two or more persons holding the components.

- The overhead assembly is prohibited.

- Do not stack components.
- Do not drop or stack items (such as mounting tools) on the unit.
- Do not grasp the terminal block or the cable to lift the entire assembly.

Before installing the PV modules, check whether the components are damaged during transport and do not install damaged PV modules. If you find damaged PV modules, contact Photonic Universe to obtain the information you need to complain about defective PV modules.

The PV module's surface is vulnerable, and damaged PV modules may affect its performance and safety; do not damage or scratch the surface of PV modules. For your safety, do not disassemble or modify the components in any way that may affect the performance and safety of the components, even cause irreparable damage, and void any trial warranties.

### 5.0 Component Installation

Do not install components near flames or combustible objects.

- Do not immerse the components in water (pure water or salt water) or long-term water (pure water or salt water) (such as fountains, spray, etc.).

- Ensure that the components meet the overall technical requirements of the system.

Allow the series components to increase the voltage or increase the current in parallel. In series, the positive terminal of the module is connected to the next negative terminal. When connected in parallel, the positive terminal of the module is connected to the positive terminal of the next module.

- The number of bypass diodes provided will vary depending on the model of the component.

- Up to two strings of components can be connected in parallel without using an overcurrent protector (fuse) in series with each string. Three strings or more can be connected in parallel, provided that an appropriately validated overcurrent protection is connected in series with each string.

Avoid shadows

- Even small shadows (eg dust, bird droppings, branches) can cause a drop in power generation. If all surfaces are unobstructed throughout the year, the component is considered "shadowless." To ensure that even in the shortest day of sunshine throughout the year, the sun can still shine on the components. When the components are installed in the car, parking should avoid buildings, trees and other shade of the block.

- Frequent blockage of components can result in aging of the EVA and persistent heating of the cell sheet, which may result in damage to the components and can not be used.

### 5.1 Component Wiring

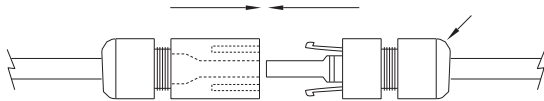
#### Correct electrical wiring

·Check that the wiring is correct before starting the

system. If the measured open-circuit voltage ( $V_{oc}$ ) and short-circuit current ( $I_{sc}$ ) do not match the specifications provided, there may be a wiring fault.

The correct connection of the electrical plug

- Make sure the connectors are tightened and properly connected. The connector must not be subjected to external pressure
- The connector can only be used for circuit connection functions and shall not be used to open and close circuits.
- The connector connections should be kept dry and clean to prevent rain from getting wet. Avoid even The receiver is exposed to direct sunlight and water soak.



**5.2**  
Ground

- Device ground: The semi-flexible component has no exposed conductors, so grounding is not required in accordance with NEC regulations.
- If the mounting bracket is a conductor or requires grounding, make sure that the entire system is installed to meet local electrical codes and regulations.

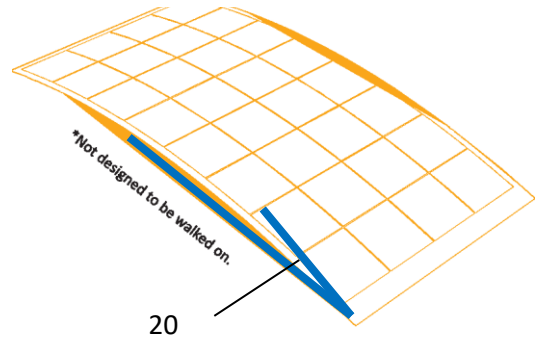
**6.0**  
Installation Guide

Use the double-sided adhesive bonding flexible components and mounting surface fitting, recommend the use of 3M VHB Series Model: 4991 thickness 2.3mm



Sided adhesive

Connect MC4 male and female connector



Mounted on curved surfaces, the component should not bend more than 20 degrees..

