

## INSTALLATION GUIDE FOR CRYSTAL PV MODULES



**Enerji bizim işimiz,  
1981'den beri.**

*Energy is our business,  
since 1981.*



TS EN 61215, TS EN 61730  
IEC 61215, IEC 61730, IEC 62804 (PID FREE)  
ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018, ISO 27001:2013, ISO 10002:2004  
UL 61730-1, UL 61730-2

## 1 PURPOSE OF THIS GUIDE

Thanks for choosing ELIN Photovoltaic Modules (hereafter referred to as “PV Module”), This Guide is to give information on how to apply ELIN PV modules properly. Installers must read and understand this Guide prior to installation. For any questions, please contact our technical department ([elin@elin.com.tr](mailto:elin@elin.com.tr)) for further information. Installers should follow all safety precautions described in this Guide as well as local codes when installing a module. Keep this Guide in a safe place for future reference (care and maintenance) and in case of sale or disposal of the PV modules

## 2 SAFETY

### 2.1 GENERAL SAFETY

- The PV modules are qualified for application class A, which may be used in systems operating at greater than 50 V DC or 240 W, where general contact access is anticipated. PV modules qualified for safety through this part of IEC61730 and IEC 61730-2 and within this application class are considered to meet the requirements for safety class II.
- The PV modules shall be properly grounded in accordance with the instructions in this Guide or the requirements of the National Electrical Code.
- Installing PV modules requires specialized skills and knowledge. Installation should only be performed by qualified personnel, electrical connections requires a licensed electrician, where applicable according to local code and law (i.e. the NEC for the USA and CEC for Canada).
- Installers should assume all risks of injury that might occur during installation, including, but not limited to, the risk of electric shock.
- One single PV module may generate more than 30V DC when exposed to direct sunlight. Access to a DC voltage of 30V or more is potentially hazardous.
- PV modules convert light energy to DC electrical energy, which are designed for outdoor use. PV modules can be mounted onto ground, rooftop, vehicles or boats etc. The proper design of support structures lies within responsibility of the system designers and installers.
- Do not use mirrors or other magnifiers to concentrate sunlight onto the PV modules.
- When installing the PV modules, abide to all local, regional and national statutory regulations. Obtain a building permit if necessary.
- Only use equipment, connectors, wiring and support frames compatible with the PV modules.
- Do not clean the modules with chemicals.

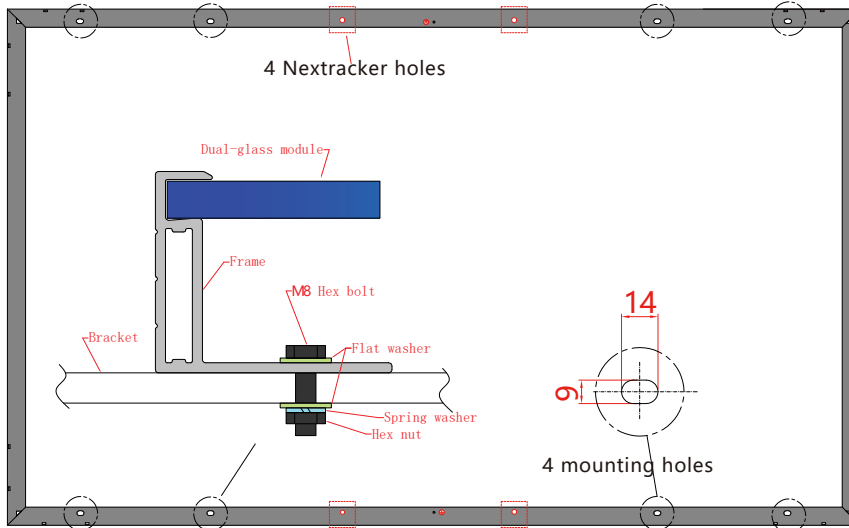








For 210 and 182-BMA modules, four mounting holes are used for the frame in the standard industry, so as to facilitate customer installation. We used four mounting holes in the frame of 210 and 182-BMA modules (shown on drawing 1-2).



DRAWING 1 - 2

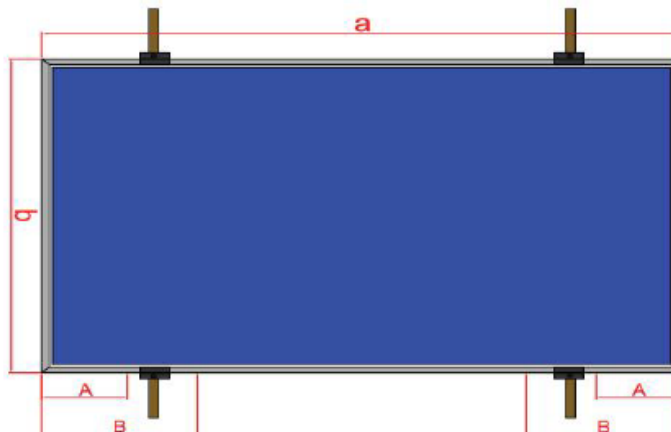
INSTALLED HOLES USED	MECHANICAL LOAD
4 Installation Holes (Suitable for frame with 4 mounting holes design)	5400Pa
4 Nextracker Holes	2400Pa

TABLE 1-2

#### 4.4 CLAMP INSTALLATION

The modules can be fixed on both the long and the short side of the module within the constraints shown in drawing2 and drawing3, using a minimum of four clamps. The modules are built to withstand a downward force of up to 5400 Pa (550 kg/m<sup>2</sup>) or 2400 Pa (244kg/m<sup>2</sup>) according to where they are clamped (shown as table2 and table3), Site-specific loads such as wind or snow which may exert forces in a different way need to be taken into consideration to ensure this limit is not exceeded for each respective mounting option.

**4.4.1. Install module with clamps at long sides of frames;**

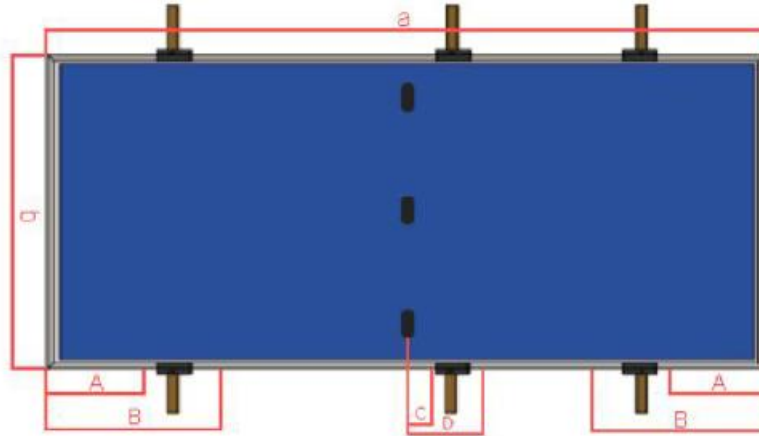


DRAWING 2 -1

**TABLE 2-1**

a(mm)	b(mm)	Clamps length	A(mm)	B(mm)	Loads (Pa)
1985/ 1970/1956	992/1002	≥ 50mm	380	580	5400
			50	580	2400
1665/ 1650/1640	992/1002	≥ 50mm	300	500	5400
			50	500	2400
2180/2465	1002/1134	≥ 50mm / ≥ 80mm	380/600	580/700	5400
			50/100	580/650	2400
2288/2256 /2279/2278	1134/1133 /1134/1134	≥ 50mm	380	580	5400
2094	1038		380	580	5400
1996/2015	992/1002	≥ 50mm	380	580	5400
			50	580	2400
1755/1909	1038/1134	≥ 50mm	300	500	5400
1674/1690	992/1002	≥ 50mm	300	500	5400
			50	480	2400
1852	1002	≥ 50mm	300	500	5400
			50	500	2400
1707/1730	1133/1134	≥50mm	300	500	5400
1722	1134	≥50mm	300	500	5400



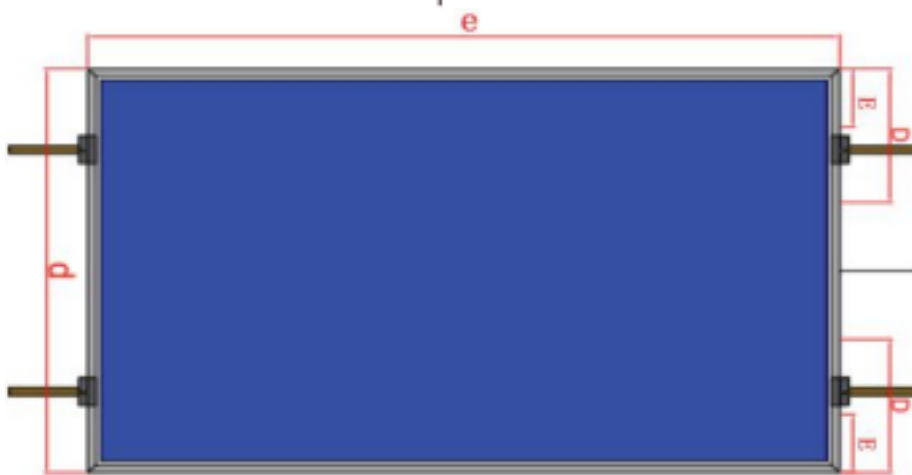


DRAWING 2-2

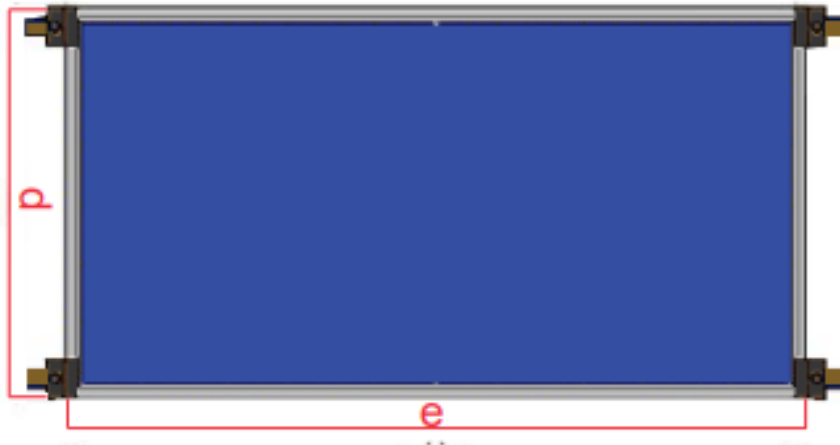
**TABLE 2-2**

a(mm)	b(mm)	Clamp Length	A(mm)	B(mm)	C(mm)	D(mm)	Loads (Pa)
2172	1303	≥80mm	250	450	50	100	5400
2384	1303	≥80mm	280	480	50	100	5400

**4.4.2. Install module with clamps at short sides of frames;**



DRAWING 3-1



DRAWING 3-2

**TABLE 3**

e(mm)	d(mm)	Clemps Length	E(mm) Drawing 3-1	D(mm) Drawing 3-1	D, E(mm) Drawing 3-2	Loads (Pa)
1909	1134	≥ 50mm	100	240	0	1600
1722	1134	≥ 50mm	100	240	0	1600

## 4.5 ELECTRICAL INSTALLATION



**WARNING: Electrical Hazard**

This module produces electricity when exposed to light. Follow all applicable electrical safety precautions.

ONLY qualified personnel can install or perform maintenance work on these PV modules.

- BE AWARE of dangerous high DC voltage when connecting module.
- DO NOT damage or scratch the rear surface of the module.
- DO NOT handle or install module when they are wet.

The wiring components shall be compatible with the PV modules.

The PV modules connected in serial shall have similar current. The Voc of one PV string shall no higher than the maximum system voltage(make reference to the maximum system voltage marked on label), the Voc temperature coefficient feature and the extreme low temperature of installation location must be taken into consideration when calculate the Voc of the PV string .

The PV modules connected in parallel shall have similar Voltage. The Isc temperature coefficient feature and the extreme high temperature of installation location must be taken into consideration when calculate the Isc of the PV array.

Please refer to local regulations to determine the system wires size, type and temperature.

The cross-sectional area and cable connector capacity must satisfy the maximum short-circuit of PV system (For a single component, we recommended the cross-sectional area of cables is 4mm<sup>2</sup> and the the rated current of connectors is more than 15A), otherwise cables and connectors will become overheating for large current.

**Please pay attention:** the temperature limit of cables is 85 ° C and the temperature limit of connector is 105°C

A qualified system designer or integrator should always be consulted.

Building permits, inspections and approvals by the local utility are generally required.

Before installation, make sure that the connector is well protected and there should be no foreign matter such as soil, sand and gravel in the connector. If any, it must be cleaned before installation. If the connector is damaged or deformed, the connector must be replaced before use; if there is no spare connector, please contact ELIN in time.

Remark: If conversion cable is needed, see attachment1 for details.

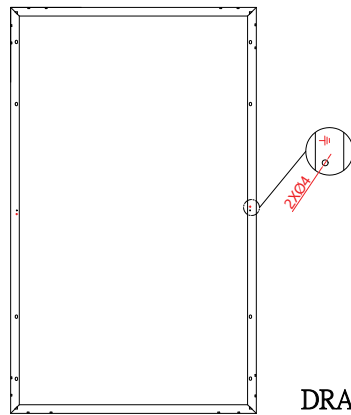
## 4.6 GROUNDING

Where common grounding hardware (nuts, bolts, star washers, spilt-ring lock washers, flat washers and the like) is used to attach a listed grounding/bonding device, the attachment must be made in conformance with the grounding device manufacturer's instructions.

For grounding and bonding requirements, please refer to regional and national safety and electricity standards. If grounding is required, use a recommended connector type, or an equivalent, for the grounding wire.

If grounding is required, the grounding wire must be properly fastened to the module frame to assure adequate electrical connection (grounding hole shown as drawing 4).

When system operates in high humidity and high temperature circumstances, transformer-Based inverter allowing system negative grounding is highly recommended to achieve mitigating risk of higher power degradation rate.



DRAWING 4

## 5 MAINTENANCE

Clean the glass surface of the module regularly with clean water and a soft sponge or cloth. A mild, non-abrasive cleaning agent may be used to remove stubborn dirt. Water with high mineral content is not recommended to clean the module.

The frequency of cleaning should be decided according to the level of pollution in the area.

Check the electrical, grounding and mechanical connections every six months to verify that they are clean, secure, undamaged and free of corrosion.

If any problem arises, consult a professional for suggestions.

**Caution:** observe the maintenance instructions for all components used in the system, such as support frames, charging regulators, inverters, batteries etc.

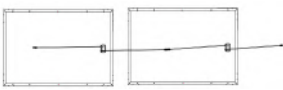
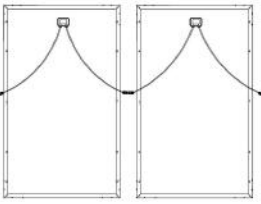
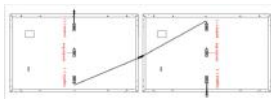

## 6 PARAMETERS

The parameters may be updated time to time, accurate parameters please check on our website;

[www.siriuspv.com](http://www.siriuspv.com)

Note: The Installation Guide is valid until the new update is available.

### REMARK

Module Type	Landscape installation	Portrait installation
Type1 Type2		
Type3 Type4 Type5 Type6 Type7		

## ATTACHMENT 1

### INSTRUCTIONS FOR USE OF CONVERSION CABLES

**Conversion cables are required to meet any of the following conditions:**

1. When the DC side input terminal of the inverter or combiner box is original MC4.
2. When the manufacturer of inverter or combiner box requires series DC input bus terminal must be MC4.

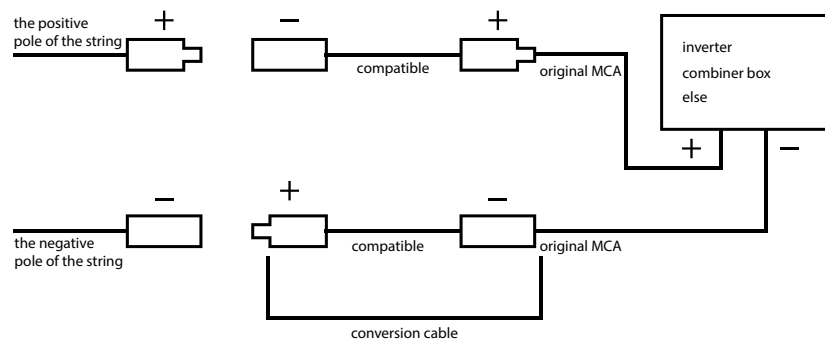
**Inspection before use:**

1. Confirm the original MC4 connector of the conversion cable and compatible MC4 connector.
2. Make sure that the connector on the conversion cable is not detached or loose, and the metal core is not skewed or water stained, etc.
3. Confirm that the cable insulation layer of the conversion cable is not damaged, and the cable is not severely bent or twisted.

**Installation of conversion cable:**

1. The conversion cable installation position: The positive pole of the string is the positive pole of the first component junction box cable in the string, and the negative pole is the negative pole of the last component junction box cable in the string.
2. Insert the positive pole of the string into the negative pole of the conversion cable (compatible), and connect the the other positive pole of the conversion cable (original MC4) to the DC positive input terminal of the inverter or combiner box.
3. Insert the negative pole of the string into the positive pole of the conversion cable (compatible), and connect the negative pole of the conversion cable (original MC4) to the DC negative input of the inverter or combiner box.

**The schematic diagram is as follows:**



**Precautions:**

1. Make sure that the polarity of the string after connection matches the polarity between the inverter or combiner box.
2. When using, install and connect strictly according to the schematic diagram, and do not reverse operation.
3. Each string on the DC side is limited to one pair of conversion cable wires, and cannot be abused, such as connecting mutple times an extension wire.