



Instructions for use

Photovoltaic module



SILIKEN appreciates your support for our products.

We recommend that you read this instruction manual carefully in its entirety before handling the photovoltaic module.

You will find a digital version of this catalog at www.siliken.com
We have printed this for our customers on paper that guarantees the smallest environmental impact, and that has obtained the following ecological certifications:



Forestry Stewardship Council



Processed Chlorine-Free



Recycled



Renewable Power

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Safety instructions



This instruction manual and the product labels contain a series of important safety messages. They should be read carefully before handling or connecting the photovoltaic module since the module produces electricity as soon as the cells are exposed to sunlight.



The safety warning symbol is shown before each safety message included in this instructions manual. This symbol indicates that there is a personal safety hazard which would affect both you and others and cause damage to the products or other property.

This user manual must not contradict any regulation that could have changed since the manual's last publication date. The last version of this manual is available at www.siliken.com



Warning: any fault in the module caused by failure to comply with the warnings stipulated in this instructions manual will lead to the complete withdrawal of the module's guarantee, together with the full exoneration of SILIKEN from any responsibility derived of any kind.

Your photovoltaic Standard module is comprised of the following elements:

1 FRAME

In anodised aluminium; providing a system for anchoring the module to the support structure.

2 GLASS

Ultra-transparent 3.2 mm thick tempered glass; providing rigidity to the unit and protecting the active surface of the cells.

3 and 5 EVA

(Ethylene Vinyl Acetate); its function is to encapsulate the cell circuit

4 CELLS

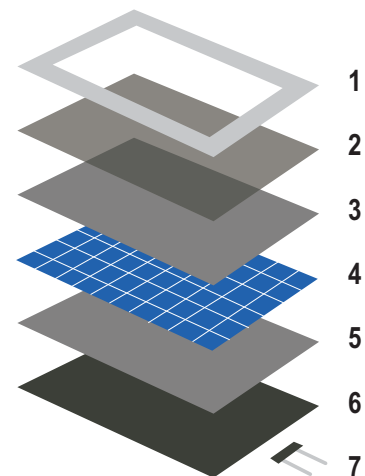
Highly efficient crystalline silicon solar cells. These generate the electricity.

6 BACK ISOLATION SHEET

Providing electrical insulation to the rear surface of the module.

7 CONNECTION BOX.

IP65 specification. Providing a simple method of electrically connecting the module to the rest of the installation.



Product description



Your photovoltaic Glass-Glass module is comprised of the following elements:

1 FRONT GLASS

Ultra-transparent 4mm thick tempered glass; providing rigidity to the unit and protecting the active surface of the cells.

2 AND 4 EVA

(Ethylene Vinyl Acetate); its function is to encapsulate the cell circuit.

3 CELLS

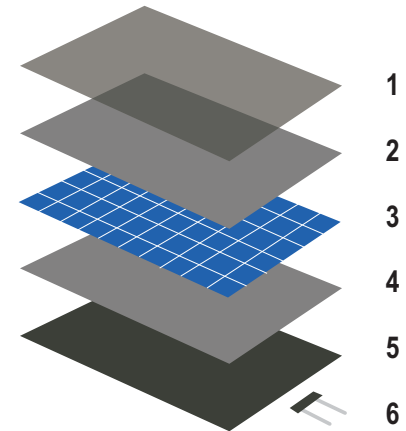
Highly efficient crystalline silicon solar cells. These generate the electricity.

5 REAR GLASS

Transparent 4mm thick tempered glass.

6 CONNECTION BOX.

IP65 specification. Providing a simple method of electrically connecting the module to the rest of the installation.



- Ensure that the module is located appropriately: it must not be placed beneath the shade of streetlights, trees, other buildings or even shade produced by other modules. Electricity production can be considerably reduced by the effect of shade.
- Install the PV module allowing air to circulate freely (see also section 6 of this manual). This will facilitate the natural ventilation of the module. The module is designed to work in temperatures between -40°C and $+85^{\circ}\text{C}$ (-40°F and $+185^{\circ}\text{F}$). In addition, both polycrystalline and monocrystalline modules produce more energy in lower temperatures. Therefore, proper ventilation favors higher power generation.
- It is important to orient the active surface of the modules towards the south as much as possible in the northern hemisphere, and towards the north as much as possible in the southern hemisphere.
- The metal support structure for the photovoltaic modules should be connected to ground in the manner indicated in the Low Voltage Directive 93/68/EEC and 2006/95/EEC and National Electrical Code.
- Ensure that the cables of the installation that connect modules to other modules, as well as those that lead to the load regulator, batteries or any other part of the installation, are not too tight since this could damage module connections or the cables themselves. Use cable ties or cable clamps to fix the cables to the structure.
- Do not leave connectors unplugged for long periods of time; dirt may

Recommendations for use



prevent subsequent connection. We recommend that the modules are connected in short-circuit to avoid this.

- Respect the electrical polarity of the modules. You must remember that they are direct current modules and, as such, direct current is required for their correct operation. In addition, when connecting the different components of an isolated installation, you must always connect the batteries first, followed by the module, and finally the power supply.
- Do not use the connection box or the connection cables to hold or transport the module. You could damage some of its components and affect its waterproofness as well as the electrical security.
- Always handle the module with care, even if it has the aluminium frame. Any blow on the glass or on a corner of the frame could deform it enough to break the glass.
- Do not dismantle, modify or adapt the PV module. Do not remove any part or the identification label from a PV module installed by Siliken Modules S.L.U. If you do so, the guarantee will be invalid. Do not apply paint or adhesives to the back side of the PV module.



WARNING: SILIKEN shall not be held responsible or liable for any possible decrease in the electricity production of the photovoltaic module supplied, nor shall it consider said reduction to be a manufacturing defect if it is the result of the failure to observe the recommendations for use described herein.

Product certificates and guarantee



- Periodic inspection
- Qualified, IEC 61215
- Safety Tested, IEC 61730



Siliken photovoltaic standard ang glass-glass modules have been designed and manufactured in accordance **with (IEC) EN 61215, UL 1703** standards and complies with the safety standards Qualification of photovoltaic modules **IEC61730 class A (class II)**. In order to comply with these international standards, high quality and durable materials have been used. In addition, **Siliken** has a series of rigorous quality controls established for each phase of the production process along with a final quality control of the output power for all manufactured modules. Siliken photovoltaic glass-glass modules are tested according to EN:14449.

Siliken provides a **10 year** guarantee for the materials of the photovoltaic module and against any possible defects of the photovoltaic module due to the manufacturing process.

Product certificates and guarantee



Siliken also guarantees output power from the photovoltaic module of at least **90%** of the minimum output power measured under standard conditions (**STC=92.94 W/ft², 77°F ±36°F, 1.5 Air mass / STC=1000 W/m, 25°C ±2°C, 1.5 Air mass**) and specified in the Siliken product's technical documentation for **10 years**.

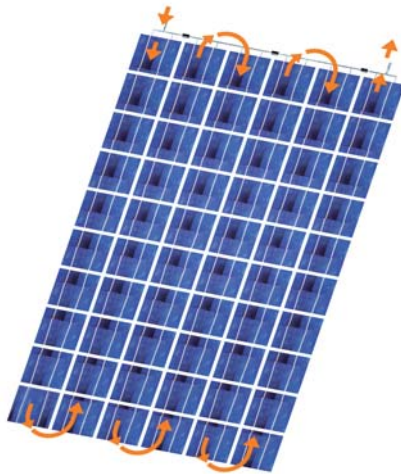
Moreover, Siliken guarantees output power from the photovoltaic module of at least **80%** of the minimum output power measured under standard conditions (**STC=92.94 W/ft², 77°F ±36°F, 1.5 Air mass / STC=1000 W/m, 25°C ±2°C, 1.5 Air mass**) and specified in the Siliken product technical documentation for **25 years**.

The photovoltaic module must be protected with by-pass diodes. The absence of these diodes could cause the photovoltaic module to malfunction or even ultimately lead to its destruction as it could catch on fire. Siliken delivers its modules with by-pass diodes included inside the connections box.

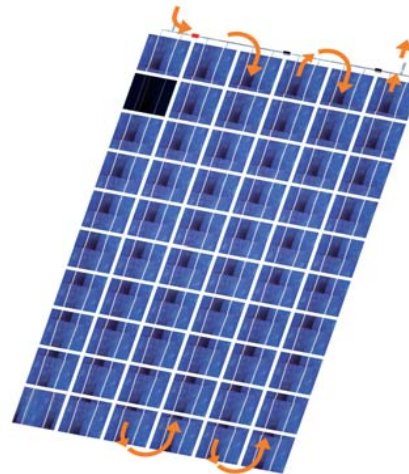
The photovoltaic cells have two operating modes: it operates as a current generator or as a current consumer. A cell exposed to solar radiation provides a current ranging between 6 and 8 amps with a potential difference of around 0.6 volts. However, when a cell is partially shaded, by the leaves of a tree for example, it starts to consume the electricity generated by the other cells to which it is connected. At the area of the cell that changes from a sunlit area to a shaded area, an effect known as a "hot-spot" occurs whereby, due to the circulation of current, the overheating produced is such that it may set the materials on fire and destroy the module. The maximum number of cells connected in series per diode is 18 cells for SLK36P6L modules and 20 cells for SLK60P6L and 60M6L modules.

By-pass diodes

Normal operation



Operation with the cell in the shade





WARNING: For the aforementioned reasons, it is important that the diodes are not removed from the connection box.

In the event of by-pass diode failure, they must be replaced with original by-pass diode spares and by personnel authorized and trained by Siliken. From the moment that the failure in the diodes occurs and until they are replaced, the affected photovoltaic module(s) must remain disconnected from the other modules on the photovoltaic array, thus guaranteeing that the circuit remains open. In any event, the decision to change the diodes is the responsibility of Siliken.



WARNING: Failure to use original spares or parts replaced by personnel without the authorisation of SILIKEN, etc., shall lead to the withdrawal of the guarantee of the photovoltaic module and SILIKEN shall automatically be exonerated from any responsibility for damage caused to property or harm caused to people.

Operating voltage



The **maximum voltage** of the system is 1000 V in Europe (see module label) and 600 V in USA (see module label). The maximum number of modules to be connected in series (in cell temperature conditions of 77°F / 25°C), is defined in the electrical data tables of the modules' data sheets.



WARNING: the value for the maximum number of modules must be corrected based their location and in accordance with the correction parameters provided in the formula, since the voltage increases as the temperature decreases. Calculate the value based on the lowest temperature in the region where the modules will be installed.

$$\text{Max. no. of modules} = \frac{\text{Maximum system voltage}}{V_{oc77^{\circ}\text{F}} + ((T^a - 77) \times \text{no cell} \times (-0.00215))}$$



Attention: Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at standard test conditions. Accordingly, the values of ISC and VOC marked on this module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor ampacities, fuse sizes, and size of controls connected to the PV output.



Attention: Refer to Section 690-8 of the National Electrical Code for an additional multiplying factor of 125 percent (80 percent derating) which may be applicable.

For field connections, use minimum No. 10 AWG copper wires insulated for a minimum of 194°F / 90 °C.

Once the modules are connected in series to obtain the correct input voltage for each type of inverter it is essential that protection fuses are located between the inverter and each series. These fuses will facilitate maintenance and control tasks, but they will mainly protect the series from each other should the polarity of one of the series of modules be incorrectly connected.

Series fuse (overcurrent protection) rating of **15 A**.

Protection fuses



The design level current for these fuses must be multiplied by a factor of 1.25 times the I_{sc} of the photovoltaic module measured under standard test conditions (92.94 W/ft^2 and 77°C) / ($1,000 \text{ W/m}^2$ and 25°C). The fuses must be suitable for direct current systems, with a breaking capacity greater than the sum of the intensities of the series of connected modules, using the method indicated in the National Electrical Code.

Failure to install this type of protection, in the event of an incorrect positive and negative polarity connection, will cause the reversed series to act as an electricity receiver causing severe damage to both the diodes and the other electrical components of the modules.



WARNING: Failure to comply with the provisions of this section will lead to the loss of guarantee and the exoneration of Siliken from any type of responsibility for damage to property or injury to people.

- The installation, handling and maintenance of the photovoltaic modules must be carried out by qualified personnel duly equipped with individual protections.
- For information purposes, these protections include: safety boots with insulation for above 1000V, gloves with 1000V insulation, as well as a helmet and appropriate clothes.
- Contact with VAC (VDC) voltage equal or higher than 30 V is potentially dangerous. Do not use PV modules with different electrical or physical configurations in a single PV system. Keep children away from the system and the PV modules during installation. Do not carry out the installation in heavy rain or wind.
- For handling electrical components, always use appropriate tools covered with insulating materials. It is recommended to avoid handling modules in humid conditions. Before handling and installing PV modules, remove your rings and other metal jewels.
- It is important to remember that the active front panel of the module is made of glass and can break if it receives an impact. In cases of broken glass, the module must not be installed as it will have lost the electrical insulation of the cells and will have a much lower performance level.

Warnings and electrical hazards



- Do not allow objects to fall on the photovoltaic module, and do not sit on, lean on, or walk on the photovoltaic module, on either side (glass or rear sheet), given that it could cause the cells to break and therefore significantly lower the power and energy performance of the modules.
- Do not open the connection box of the photovoltaic module. The cover of the connection box has a safety seal to guarantee to the customer that it has been correctly sealed to provide IP65 level of protection. If the cover is not correctly sealed, there is a risk of damage to the module due to water ingress.
- Do not disconnect the terminals of the modules if they are electrically connected to other devices of the system. Before loosening connectors, disconnect the modules from the inverter or the battery charger using switches. Before handling any electrical parts of the PV installation, cover the active surface of the module from sun light.
- Do not use mirrors or magnifying lenses to concentrate light on the PV modules, they were not designed for this.
- When handling and installing the module, we recommend covering the active surface of the photovoltaic module since the modules generate electricity when they are exposed to any source of light even when they are not connected to any other device.

- Do not remove any of the module's components or remove the technical specifications label.
- Do not place the installation near to any possible source of inflammable gases or vapors, since the photovoltaic modules can cause sparks just like any other electrical component.
- Always ensure the installation is equipped with protection devices against electrical hazards.
- Remember that when the modules are connected in series, the voltage present will be the sum total of the voltage from each module, and when the modules are connected in parallel, the current present will be the sum total of the current from each module. This means that an installation with various modules may contain high levels of voltage and current.
- When screwing the frame of the module to the structure, avoid rubbing against the plastic insulation on the rear surface of the module (Tedlar) with the tool or elements protruding from the structure because this could cause the plastic to tear, causing a loss of electrical insulation.
- The PV module produces power even with a broken glass or back sheet. Do not dispose of the module in containers or dumping sites, this can be dangerous. If the glass or the back sheet is broken, in case of

Warning and electrical hazards

electrical failure or if the service life of the module ends due to any cause in general, please contact Siliken to appropriately eliminate and/or recycle the product according to American/European norms.

- Consult the fire security regulations, norms and prerequisites for buildings and structures with your local authorities. Keep in mind that a roof-top construction and installation may affect the building's fire security; erroneous installation of PV modules can increase this risk in case of fire.



WARNING: Failure to comply with the provisions of this section will lead to the loss of guarantee and the exoneration of Siliken from any type of responsibility for damage to property or injury to people.

The graphs of the technical data sheets show the behaviour of the photovoltaic modules. Two types of Current-Voltage curves (I-V) are shown:

- At different radiations and constant temperature (77 °F / 25°C).
- At different temperature and constant radiation (92.94 W/ft² / 1000 W/m²).

The standard test conditions or STC used for module labelling are:

Radiation = 92.94 W/ft² / 1000 W/m²

Cell temperature = 77 °F / 25 °C

Air Mass = 1.5

It must be noted that the voltage and current behaviour of the cells depends on the solar radiation and temperature. Therefore, the actual operating conditions of a photovoltaic module will depend on the region where the module is installed and the ambient conditions in that region.

The voltage dependence in relation to radiation is defined by a logarithmic function: at low radiation levels a high voltage is obtained. However, the current dependence in relation to radiation is defined by a linear function: it increases in direct proportion to the increase in solar radiation.

Current-voltage curves



The voltage and current dependence with temperature is defined by a linear function. On one hand the voltage decreases as the temperature increases at a ratio of $-2.15 \text{ mV/}^\circ\text{C}$ per cell in series. On the other, the current increases at $+3.50 \text{ mA/}^\circ\text{C}$. Therefore, of the 7.5 to 8 amps that the module is capable of generating at $77^\circ \text{ F} / 25^\circ\text{C}$, the current increases slightly with each degree centigrade of increase in the module temperature, while the voltage decreases.

In general, we observe a decrease of the photovoltaic module power as the operating temperature increases, at a ratio of $-0.43\%/^\circ\text{C}$. For example, a module of 221 Wp will lose 0.95 Wp for every additional $^\circ\text{C}$ in the cells.

The module operates at between 122 and $158^\circ \text{ F} / 50$ and 70°C when it generates electricity with radiation of between 800 and 1100 W/m^2 and a wind speed of less than 1 m/s .

The indications stated below are general for any type of module:

When assembling the modules, the safety conditions stipulated in the Low Voltage Directive 93/68/EEC and 2006/95/EEC and the Framework Directive on Safety and Health at Work 89/391/EEC, 91/383/EEC, 2003/134/EEC, 89/654/EEC, 89/655/EEC, 89/656/EEC, 92/57/EEC and 92/58/EEC.

When Glass glass modules have to be installed in buildings, special profile for structural glass has to be used, silken modules have to be fixed by the four edges or by the two long edges. Whenever the PV installation serves as a roof, meaning that the photovoltaic module works like a roof tile, the installation must be designed according to the Building Codes in force in the particular country in question.

Standard Modules must be anchored in a secure manner, using special fixing systems or assembly sets for photovoltaic systems.

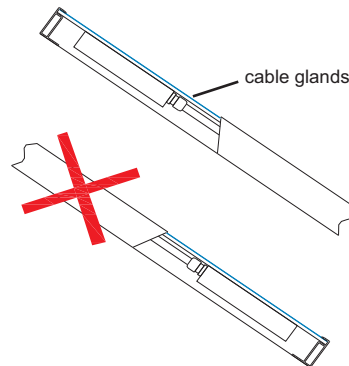
Install the module so that the connection box cable holders are never oriented upwards in the direction of the inclination.

The ideal orientation for the photovoltaic module is towards geographic south in the northern hemisphere or towards geographical north in the southern hemisphere. The inclination of the module will depend on the requirements of the installation itself (grid connection systems or isolated supply).

Mechanical assembly of the modules

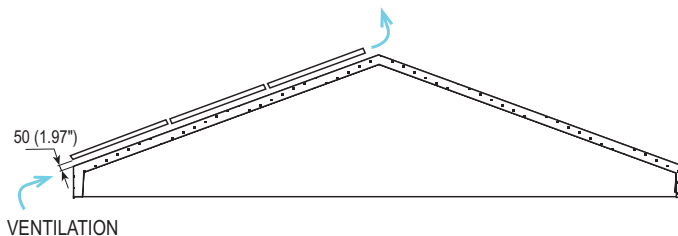
Always use rubber joints (long-lasting synthetic rubber) to avoid direct contact between the metal parts of the PV module and the supporting structure as well as to prevent possible deformations of the parts that could damage the module.

Install the module so that the connection box cable holders are never oriented upwards in the direction of the inclination.



Siliken recommends that the modules not be installed at reduced inclination angles that could cause dirt to accumulate on the glass or on the edges of the frame. Siliken recommends a minimum inclination of 5°.

In the case of roof-top PV modules, leave space at their back side to allow for proper ventilation (minimum of 50 mm [1.97 inches]).



For integrated modules that serve as a roof tile, it must be assured that the rear part of the modules is ventilated.

A photovoltaic module is not a structural element. Be sure that the module is not going to support any load that could cause the tempered glass to break.

Maximum permitted loads for PV modules refer to uniformly distributed loads of wind and/or snow. Therefore, do not install PV modules in areas

in which snow tends to accumulate or icicles and/or ice plugs could obstruct water drainage and cause damage to the module.

In areas with heavy snowfall, adjust the height of the mounted structure so that snow does not cover any active part of the front side or any back parts, such as the connection box or cables, for a prolonged period of time in winter.

The indications stated below are only for standard modules with a frame:

The modules with frames are supplied with 4 holes on the aluminum frame, at the distances and with the diameters that are specified in the data sheets of the products (available at www.siliken.com). These holes are used to secure the module to a structure which must have been designed by a qualified technician to support the loads produced by wind and snow, as indicated in the Directive of Construction (89/106/EEC) and the Directive 2002/91/EEC Energy Efficiency Building.

The module must be mechanically fixed at least at these four points. The module is certified when anchored with M8 bolts in 4 fixing holes on the frame, with a minimum torque of 10 Nm (7.4 ft-lbf) and a maximum of 15 Nm (11.1 ft-lbf).

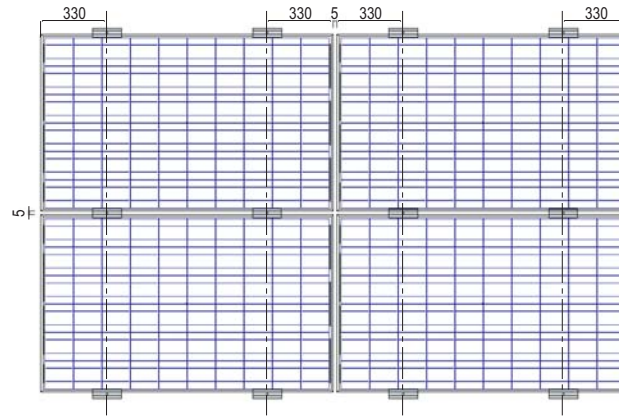
Use tools for checking the torque.

Always use rubber joints (long-lasting synthetic rubber) to avoid direct contact between the metal parts of the PV module and the supporting structure as well as to prevent possible deformations of the parts that could damage the module.

Other fastening methods that attach the module around the perimeter are also acceptable, such as those designed for integration on roofs or similar methods.

A minimum space of 5 mm must be left between modules in order to prevent contact between them due to thermal expansion. For less space between modules, rubber gaskets that prevent contact must be used. The recommended layout in the event that anchor clamps are used for the module with a frame is the layout shown in the following schematic of the SLK60P6L and SLK60M6L modules.

Mechanical assembly of the modules



Always shield the module's back surface from contacting outside objects or structure parts, especially when the module is under load. The back coating could be damaged.

The indications stated below are only for standard modules without a frame:

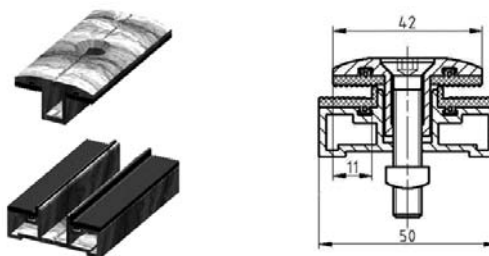
If the module is supplied without the aluminum frame, handle it as follows:

In general, handle modules with extreme care before they get to the

place of installation. A blow on the side can break the entire glass structure that protects the module's active front.

Avoid direct contact between the glass of the PV module and the metal of the structure's parts, given that it could cause the glass to break. Leave sufficient space between the parts and the laminates to absorb expansions and contractions due to temperature changes.

When fastening the laminate to the support structure, do so using Schelleter type anchor clamps with a rubber gasket or similar devices that are suitable for laminated modules without a frame. To assure correct installation and prevent tension in the assembly, the laminate must be introduced on the clamp to a minimum of 8 mm and a maximum of 10 mm, and the torque applied should be between 15 and 20 Nm.



Mechanical assembly of the modules

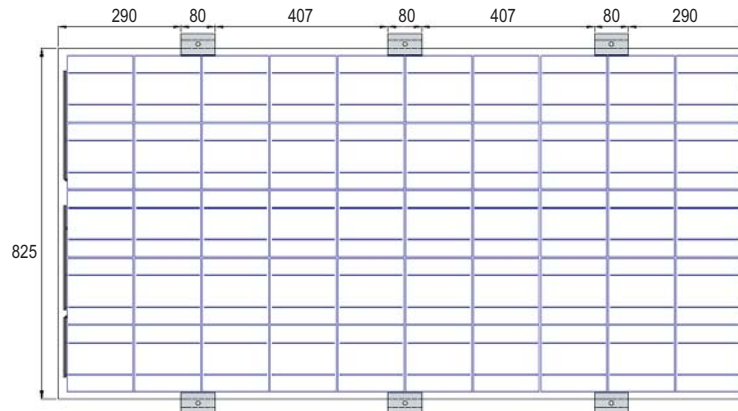


Other fastening methods that attach the module around the perimeter are also acceptable, such as those designed for integration on roofs or similar methods.

Listed below are the details of where the anchor clamps should be positioned for each model of the modules:

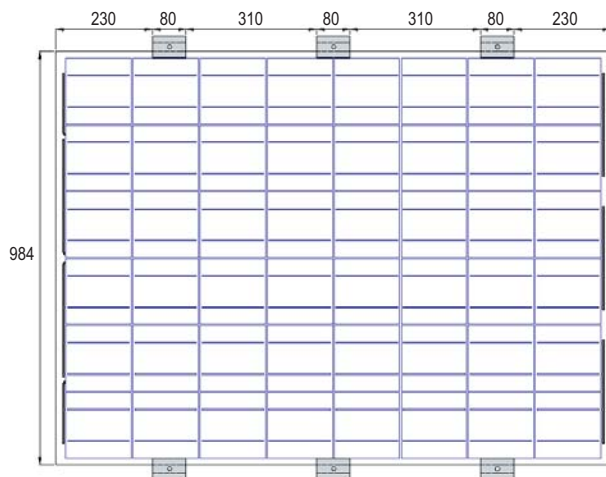
SLK50P6L module:

3 x 80mm fixing clamps should be placed on each lengthwise edge of the module, as shown in the diagram below:



SLK48P6L module

3 x 80mm fixing clamps should be placed on each lengthwise edge of the module, as shown in the diagram below:



The indications stated below are only for standard Glass-Glass PV modules:

Mechanical assembly of the modules

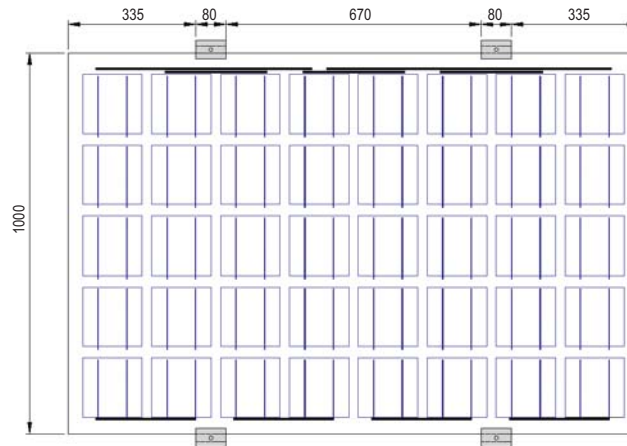


When glass-glass modules are going to be installed on buildings, they must be fastened with profiles that are suitable for structural glass so that the module is fastened by all four edges or by the two longest edges.

Listed below are the details of where the anchor clamps should be positioned for each model of the modules:

GG40P6L module

2 x 80mm fixing clamps should be placed on each longest edges of the module, as shown in the diagram below:



For any questions, please contact the Technical Department of Siliken



WARNING: Failure to comply with the provisions of this section will lead to the loss of guarantee and the exoneration of Siliken from any type of responsibility for damage to property or injury to people.

For any modification that may need to be made to what is detailed in this section of the user manual, contact Siliken Modules in order to jointly evaluate the possibility of allowing any such variations, which may be necessary in specific cases of some photovoltaic module installation systems.

- **Siliken** photovoltaic modules require a minimum level of maintenance throughout their useful life, which includes the following operations:
- Cleaning of the photovoltaic modules. The energy production of the solar module can be affected if the glass is dirty. Periodically clean the modules to guarantee maximum production.
- The steps below should be followed:
 - Spray the front surface of the PV module with plenty of water at ambient temperature and at low pressure for approximately 3 minutes. Pressurized water (max. of 100 bar) can also be used from a distance of no less than 50 cm.
 - Clean the front surface with a soft polyurethane sponge or a soft cotton cloth by wiping in circular motions.
 - Rinse the front surface of the PV module with plenty of water to eliminate any remaining dirt.



Do not use detergents or cleaning products, chemical products, metal elements, cutting tools, scrapers or sharp instruments, which can damage the glass surface. This could cause a decrease of output power.

- Check the tightness and condition of the electrical connectors annually.
- Visually inspect the cables and compression glands.
- Visually inspect the front face of the photovoltaic modules to verify that there are no defects.



WARNING: Failure to perform the checks and minimum maintenance operations established in these instructions will lead to the withdrawal of all guarantees and the exoneration of SILIKEN for any responsibility which may be derived from said failure.

For any doubt about the technical characteristics of our products, more information can be found under the data sheets at our web page at www.siliken.com

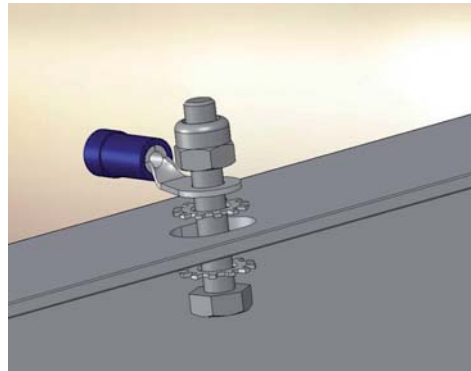
Module frame grounding



All exposed metal parts of PV module frames must be grounded during installation (per NEC 690.43), and to accomplish this Siliken Modules SLU recommends the following components:

- (1) M4 AISI304 stainless steel bolt with hexagonal nut.
- (2) DIN67982 stainless steel serrated washers.
- (1) Cable gland type connector for 10 AWG cable with washer for M4 bolt.

Assemble as shown in the following diagram:



The ground connection must be made using green and yellow cables with a cross-section of 2.5 mm² or more and with plastic insulation that is suitable for a minimum temperature of 90° C.

While crystalline PV modules are not likely to polarize and their operation is not usually harmed by these types of effects, it is advisable to protect the negative polarity of the cells from possible electrical signals that are uncontrollable or unpredictable.

It is advisable to avoid high potential differences between the glass assembly and the frame with respect to the negative of the module series. This can cause the glass and encapsulating materials to become positively charged, which could affect the electrical operation of the module and thus reduce its performance.

Before making any type of connection to protect the module from the effects of polarization, be sure to consult the inverter manufacturer to see if it can be connected adequately to protect against these kinds of effects.

Do not use the ground of the structure or of the module's frame to provide this type of protection against polarization. This could be hazardous.

Module frame grounding



- **Other option can be:**

Materials (to be supplied by the installer of the system).

(1) Lay-in Grounding Lug (Outdoor Rated), IlSCO GBL-4DBT (or equivalent, UL listing required).

(1) #10-24 1/2" Stainless Steel (SS) Self-Threading Machine Screw.

(1) #10 SS Double Bifurcated (Toothed) Lock Washer between the Nut and the Aluminum Frame.

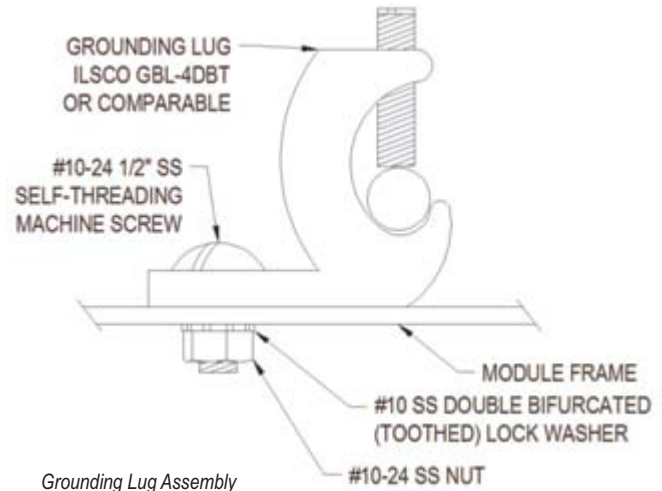
(1) #10-24 SS Nut.

- **Procedure:**

Use one of the two labeled grounding holes provided on the modules. The aluminum frame is anodized so it is essential to remove the anodized surface finish around the hole in the local area beneath the base of the lug to get good connectivity between the ground lug and the module frame. You can use emery paper or an abrasive grit wheel to lightly scrape the surface. Place the lug on the surface of the module, and add the self-threading screw creating a threaded hole and tighten. Put the lock washer then the nut on the screw on the inside of the frame and tighten to a minimum torque of 20 inch-pound.



Grounding Lug Picture



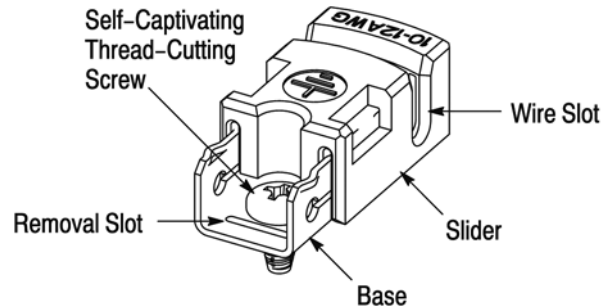
Grounding Lug Assembly

■ Other option can be:

Materials (to be supplied by the installer of the system).

1. Tyco Electronics Solklip (Trademark) Grounding Clip Assembly:
1954381-1

Module frame grounding



■ Procedure:

Use one of the two labeled grounding holes provided on the modules. The aluminum frame is anodized so it is essential to remove the anodized surface finish around the hole in the local area beneath the base of the lug to get good connectivity between the ground lug and the module frame. Place the grounding clip onto the frame, making sure that the screw straddles the drilled hole.

Using a screwdriver, thread the screw into the hole until the head is flush with the base and the base is flush with the frame, then tighten the screw with another 1/4 to 1/2 turn.

Recommended torque is between 2.3 and 2.8 Nm [20 and 25 in.-lbs].

Insert the wire into the wire slot. Press down on both ends of the wire (the wire slot will cause the wire to form a slight curve).

Manually, or using channel lock pliers, push the slider over the base until it covers the base. This will terminate the wire.

While crystalline PV modules are not likely to polarize and their operation is not usually harmed by these types of effects, it is advisable to protect the negative polarity of the cells from possible electrical signals that are uncontrollable or unpredictable.

It is advisable to avoid high potential differences between the glass assembly and the frame with respect to the negative of the module series. This can cause the glass and encapsulating materials to become positively charged, which could affect the electrical operation of the module and thus reduce its performance.

Before making any type of connection to protect the module from the effects of polarization, be sure to consult the inverter manufacturer to see if it can be connected adequately to protect against these kinds of effects.

Do not use the ground of the structure or of the module's frame to provide this type of protection against polarization. This could be hazardous.



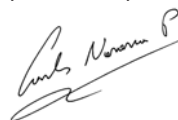
Declaration of CE Conformity under Directive 89/336/EEC (EMC Directive), Directive 2006/95/EEC and 93/68/EEC (Low Voltage Directive)

We, **Siliken**, do hereby declare under our sole responsibility that the **Solar Photovoltaic Module** product of the Siliken brand models **SLK60P6L, SLK36P6L, SKL60M6L, SLK36M6L, GG40P6L and GT40P6L** comply with the requirements of standards:

EN 61000-6-1:2001, EN 60664-1:2003, EN 61000-6-3:2001, EN 60664-3:2003, EN 60270:2001, EN 60664-5:2003, EN 61140:2002, EN 61730-1:2007, EN 61730-2:2007 and are therefore in conformity with European Community Directives 2004/108/EC, 2006/95/EEC and 93/68/EEC

The product was labelled with the CE marking for the first time in 2002.

Rafelbunyol, Valencia, May 2010



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