

2012



EL60/IS PV MODULES - KIT SETUP INSTRUCTIONS



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PATENTED "CAPILLARY COMB"

The revolution of the integrated photovoltaic roofing

Congratulations on purchasing modules EL60/IS (Integrated Structure) equipped with CAPILLARY COMB frame. The absolute reliability of the system, produced entirely in Italy, is guaranteed by the choice of high quality materials, as well as by multiple inspections performed throughout the production process.

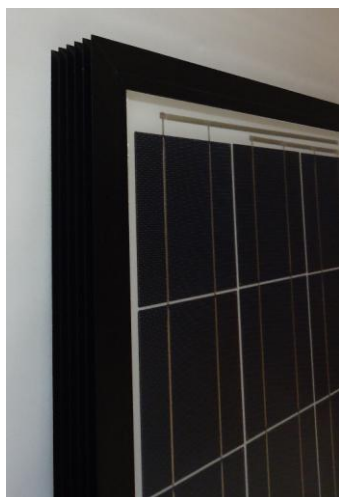
The "CAPILLARY COMB" frame, designed developed and manufactured by HELLER SpA is patented in Europe and is mounted exclusively on EL60/IS modules produced by EL.ITAL. S.p.a. The modules are certified to the requirements of the Extended Control IEC 61215 and are tested according to IEC 61215 Extended Control as well as those of the safety standard IEC 61730.

The "CAPILLARY COMB" system is based on the concept of simplicity by giving to installers the possibility to have a fast and effective training and to avoid as much as possible the errors during the assembly stages. The module frame with a particular single and inseparable shape, made up of multiple fins side around the entire perimeter, which joined / spliced to each other in an installation of adjacent photovoltaic modules of the same type guarantees the impermeability of the surface without the use of additional components.

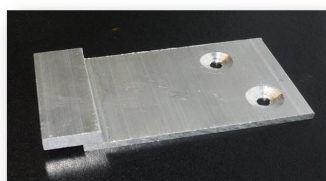
The fins are multiple and being overlapped to each other in order to create a continuous barrier which does not allow the infiltration of water droplets in the lower part of the photovoltaic surface but ensure the outflow into the lower end of the module frame. The photovoltaic module EL60/IS equipped with CAPILLARY COMB framer removes and replaces the conventional rooftop and is suitable to be used as architecturally integrated roof coverage. The recommended installation requires a minimum angle of 10 ° (Tilt Angle)

This manual describes the installation, connection, maintenance of modules EL60/IS equipped with CAPILLARY COMB frame. They are intended for specialized technicians who, thanks to their professional skills, are familiar with the installation procedures. The installation and connection of the modules must be performed only by properly trained and qualified personnel for installation of this system. Before installation, the technical staff must read and understand these instructions and follow them. It is compulsory to complete, sign and give the attached printable verbal to this manual to the owner.

KIT



**1 X MODULE EL60/IS
with Capillary Comb frame**



**3 X CLAMPS
drilled and V-shaped**



**6 X MOUNTING SCREWS FOR PROFILE
Auto-Drilling and Threading screws**

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1. Safety information

This guide is direct to solar systems installers' or people who have been trained to install the system. In addition, a photovoltaic (PV) modules can be connected to the public electricity net only by an electrician authorized by the qualified electric company . The installation must be carried out in compliance with all applicable regulations. If necessary, ask for the expert advice of one of ELITAL technician.

During installation, observe the following safety regulations:

General rules

Electrical systems and equipment for operation

Construction (personal fall protection equipment)

The supporting structure of the roof must be able to support the additional load of the PV system

The mounting system and modules can bear a maximum load of 2.4 kN/m².

Be careful to respect those limits taking into account loads linked to a location and caused for example by wind and snow. Verify the adequacy of the roof substructure with reference to the capacity and state of preservation.

(Professional static check is required)

When working on the roof, follow the appropriate safety precautions:

For heights over 2 meters, required safety harnesses!

Protect the area below the installation site from falling objects.

NOTES:

Follow the indications about CAPILLARY COMB system quoted in the following pages. The manufacturer can not be sure that these instructions are observed.

Improper installation can result in property damage, and thus represents a danger to people.

Instructions noncompliance will void the warranty, as well as the disclaimer system manufacturer.

2. Instructions for the transport and storage

The PV modules with EL60/IS CAPILLARY COMB frame are made with high quality materials and are therefore very sturdy and long lasting. However, to avoid damage, it is suggested to leave forms in their original packaging until the installation.

Storage

To prevent damage to the modules, it is strictly forbidden to stack the pallets.

Keeping modules in their original packaging, in a dry place until installation is suggested.

Maneuver on the ground

The modules are delivered on pallets and are adequately protected from the atmospheric agent.

During the unpacking, after having removed the fasteners, drew the modules from the package by

lifting them at the ends. As the modules are coupled to each other, when drawn from, not inclining them, otherwise one runs the risk of deforming the fins of the frames.

Switching on roof

The modules EL60/IS with CAPILLARY COMB frame look like as standard modules, can be handled with ease on the roof and can be placed on the roof structure making sure the deformation of the fins. It is important to pay attention on the placement of the modules with sharp corners on roof coverings because they may be damaged.

Disposal of packaging

Separating and transporting the packaging materials to a recycling center.

Physical removal

It is suggested an immediate check of the modules delivered as well as of its packaging in order to value any shipping damages. If damage is discovered, make a comprehensive note on the bill of parcel and document it with photographs. Don't forget driver's countersignature.

3. The requirements that must be the roof of the building

The photovoltaic roof-integrated with the system CAPILLARY COMB can be integrated into essentially any roof or mounted on any roof that it is at the recommended minimum of 10°. Due to extreme weather conditions condensation can create and moisture can penetrate the soffit of the modules.

It is absolutely necessary to apply a breathable underlay membrane or vapor barrier!
Before installing the PV system must be executed a review of the suitability of the roof. In the case of steep slopes of the roof surfaces, these must be leveled.
If the PV system is installed correctly, the roof and photovoltaic modules are well ventilated and waterproof.

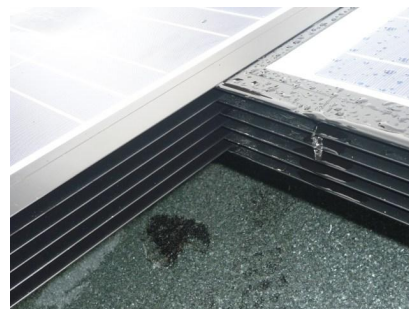
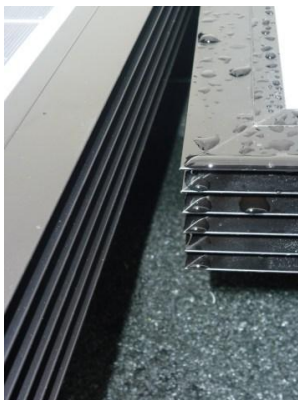
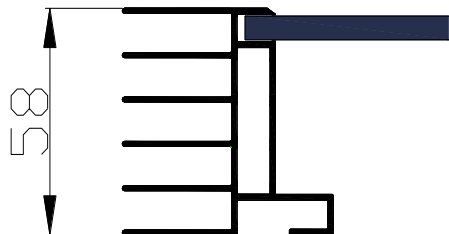
The impermeability to rain is possible first of all thanks to the multiple fins surmounted one another, creating a continuous barrier which does not allow the infiltration of water in the lower part of the photovoltaic surface composed of these modules but ensure the outflow into the lower end of the photovoltaics surface.

The connection to the roof, side, top and bottom is made with the corrugated connection that must be designed specifically for each individual roof and suitably cutlery to obtain also in this case a photovoltaic surface impervious to rain and aesthetically valid.

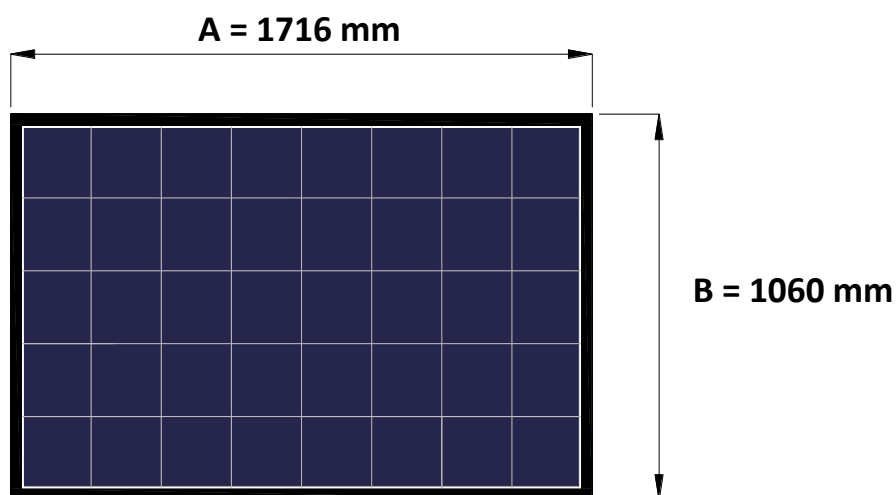
For roof pitches from 10 ° to 20 ° pay attention to the pose of the modules and flashings fitting.

4. Module Dimensions and Photovoltaic Area

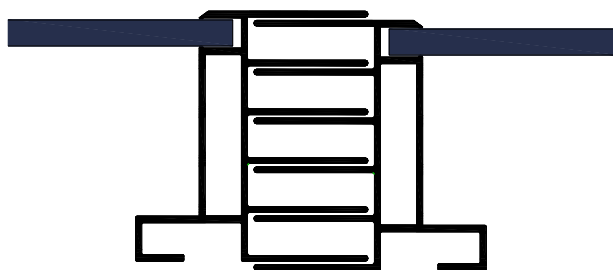
Frame Dimension

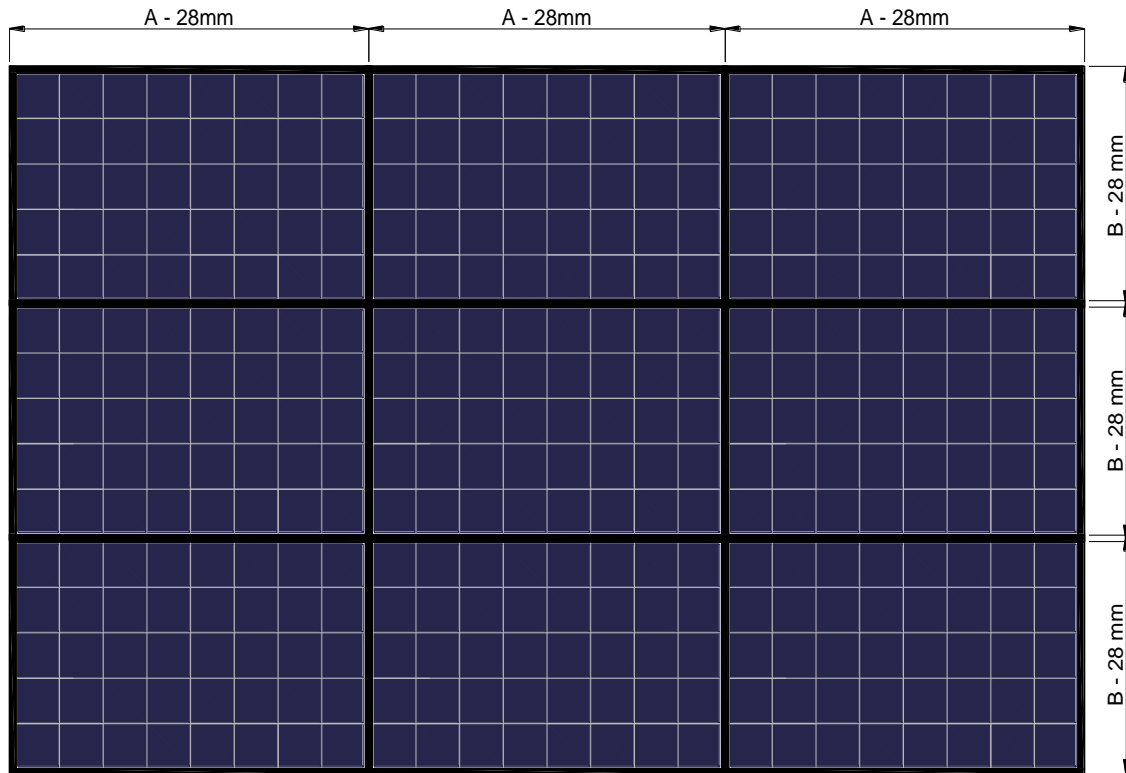


Module External Dimensions EL60/IS equippe with CAPILLARY COMB frame



Adjacent EL60/IS Modules Overlapping with CAPILLARY COMB frame

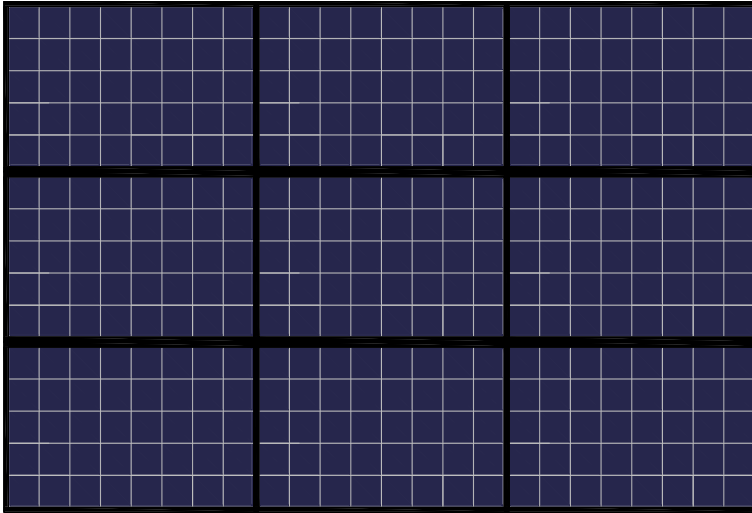


Adjacent EL60/IS Modules recommended distance with CAPILLARY COMB frame

5. EL60/IS Modules Positioning with Capillary Comb frame

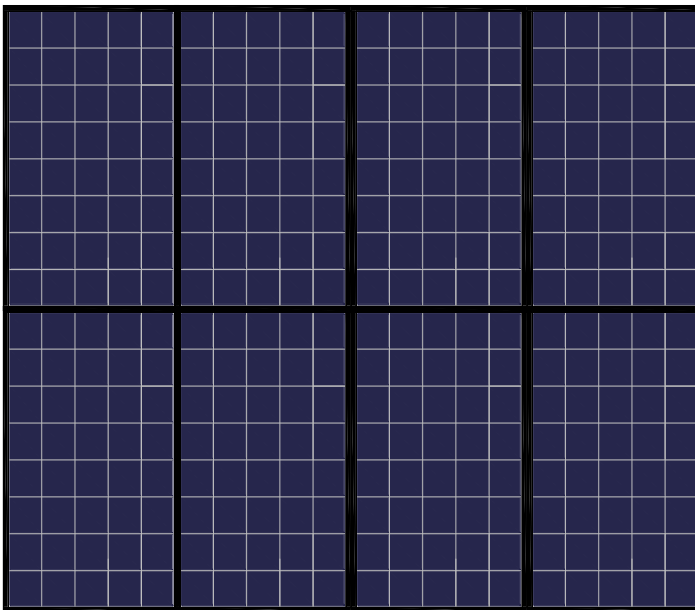
Solution A – Modules with long side parallel to roof top edge

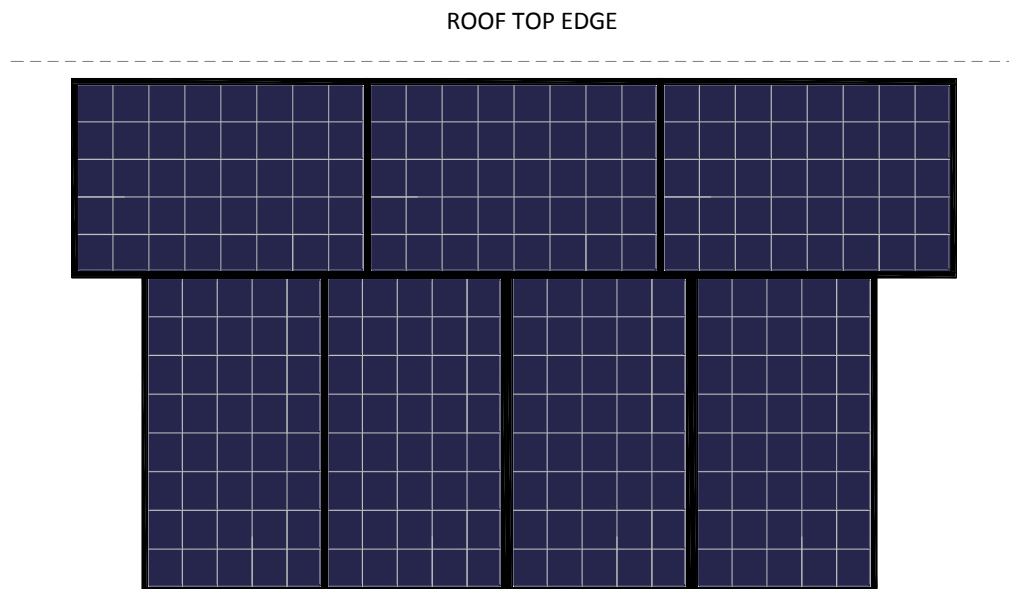
ROOF TOP EDGE



Solution B – Modules with short side parallel to roof top edge

ROOF TOP EDGE



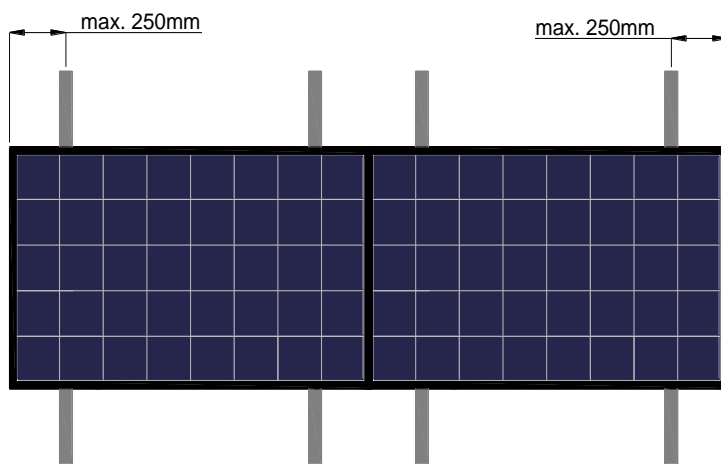
Solution C – Modules having two different leanings on the same surface**Recommended Tilt Angle**

For tilt angles below the minimum recommended limit (10°) it is suggested to get in contact with our technical staff.

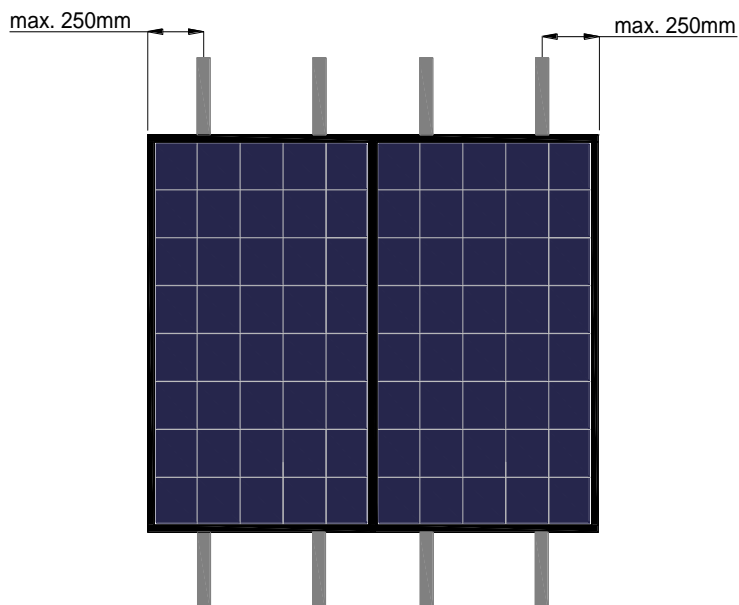
6. Setup with metallic or wooden profiles

Metallic or wooden profiles must be always installed in the direction of the roof slope / gutter and must be installed with a distance of 50 mm minimum in order to allow a proper aeration of the photovoltaic surface.

Modules having the long side parallel to roof top edge

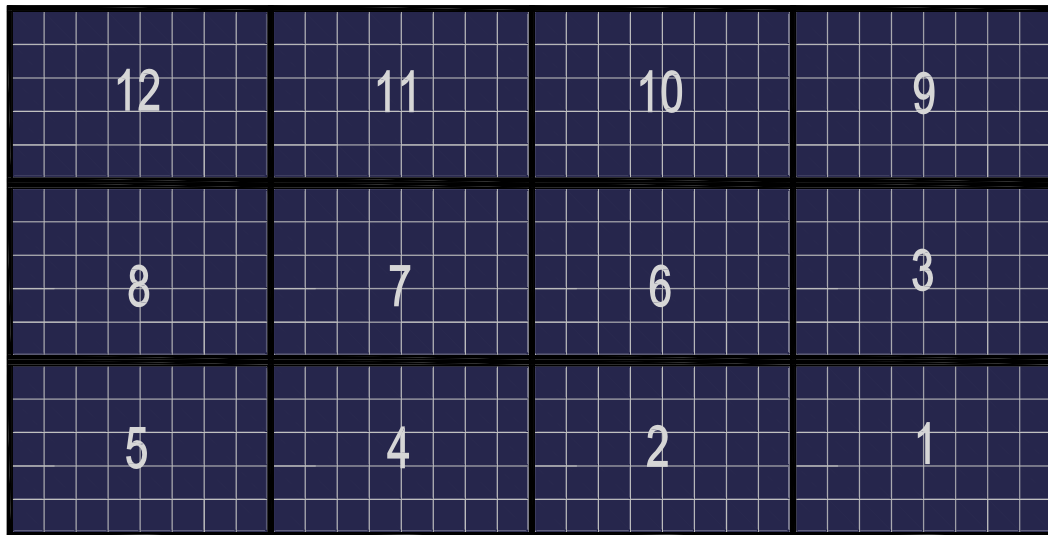


Modules having the short side parallel to roof top edge



7. Modules Installation Sequence

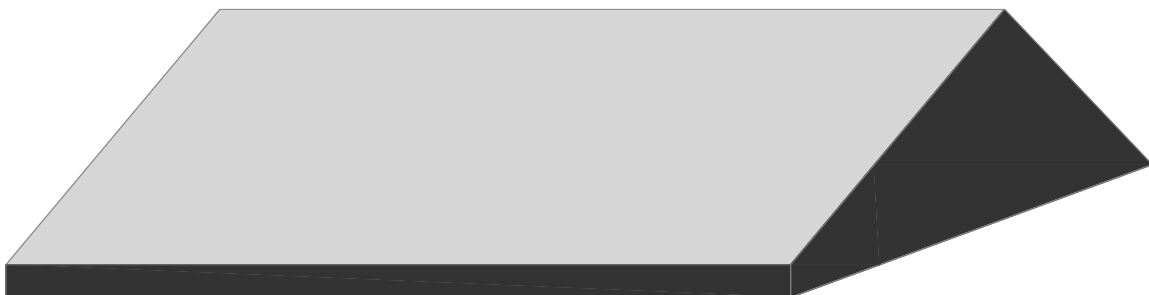
ROOF TOP EDGE



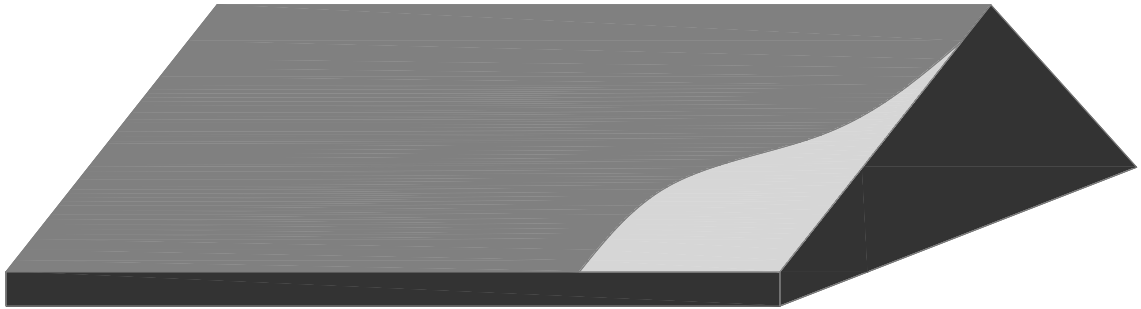
8. Preliminary operations for rooftop building

The rooftop setup is charged to the customer and must be preset or renovated following the rules of an entitled designer taking care of all the static as well as thermal parameters depending on the setup place geographic position.

a. Rooftop structure residential / industrial / agricultural

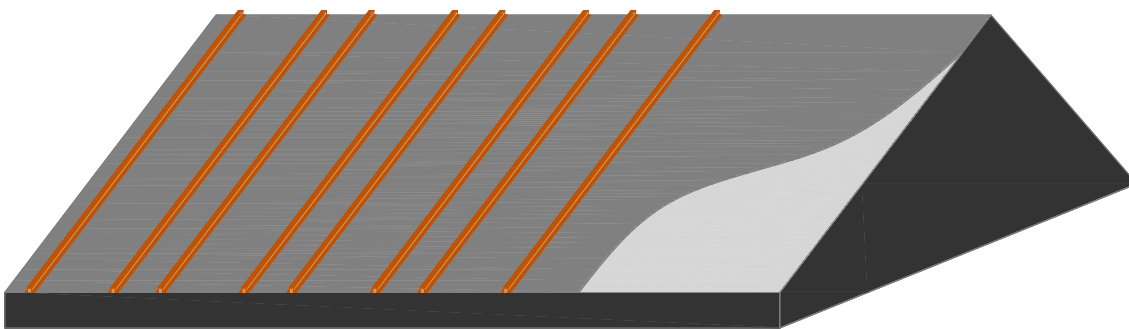


- b. Breathable membrane or steam-barrier placed below tiles

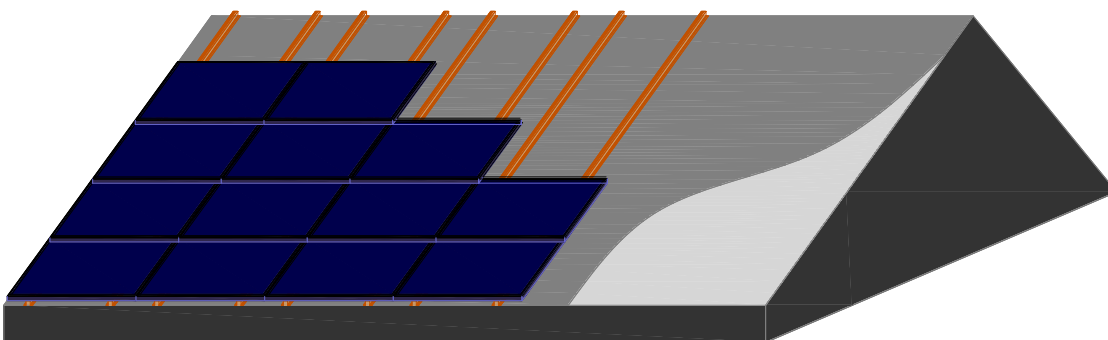


- c. posizioning metallic or wooden profiles

Metallic profiles / wooden profiles must be positioned following strictly the slope, this is done to ensure a proper setup and an adequate photovoltaic surface aeration.



- d. EL60/IS modules positioning with Capillary Comb frame



9. Exclusion of liability

The following instructions for the proper setup are intended to be applied with CAPILLARY COMB frames only supplied on the EL60/IS modules for the construction of highly integrate photovoltaic plants. The audience of those instructions are companies and skilled operators authorized and trained to install such a system.

It's strictly forbidden to install photovoltaic plants by personnels not properly trained and skilled or without the required knowledge.

10. PV modules disposal



EL.ITAL. S.p.a. IS MEMBER OF PV-CYCLE FOR THE DISPOSAL OF THE PV MODULES UPON THEIR END OF OPERATION LIFE CYCLE.

11. Setup tooling

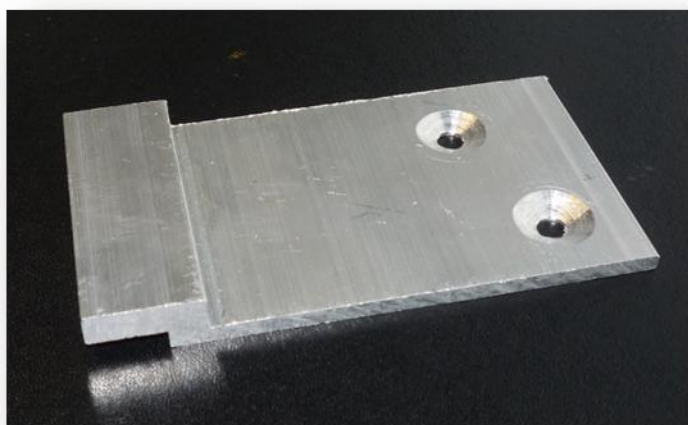
For a proper installation, few tools are required as describe in the following setup instructions.

- Automatic Screwdriver
- Hammer Drill
- Screwdriver edge for Phillips screw and hexagonal (Torx) screw
- Tracking wire
- Hammer

12. Overview components



**PV Module EL60/IS with
CAPILLARY COMB frame**



FASTEN BRACKETS MODULE

**n° 2 brackets per module for the
other modules**

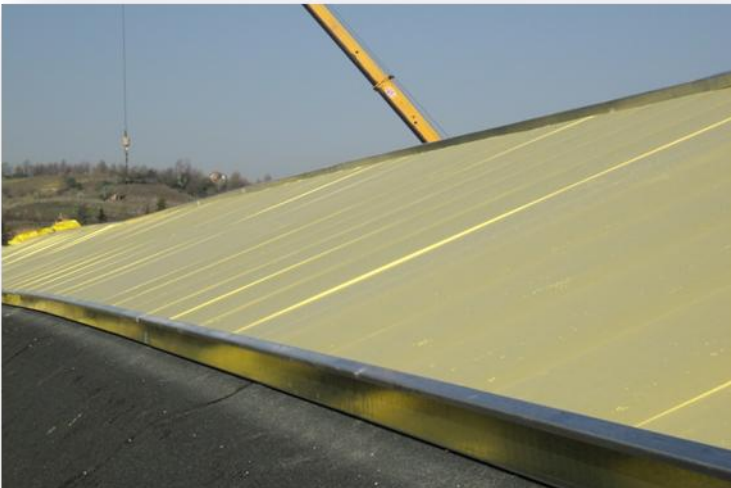
**n° 4 brackets per module for the
first low line of the pv surface**



**FASTEN BRACKET SCREW
(n° 2 per bracket)**



13. INSTALLATION **THROUGH** **PHOTOGRAPHIC** **DEMONSTRATION**



**Industrial roof framework with
insulation panel**

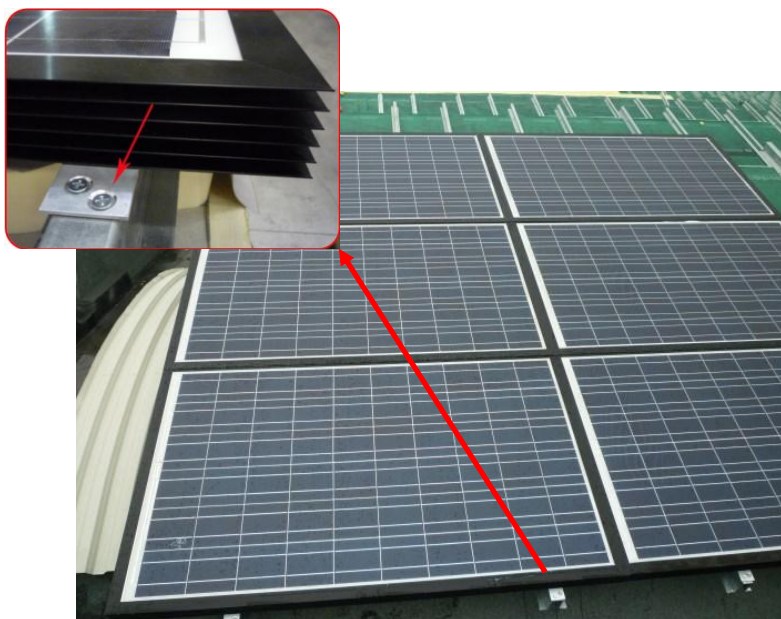


**Transpiring membrane
under tile applying**



Placement of PV fastening outline

PV fastening on underlying outlines



Detail of fitted and fasten bracket





PV array during assembly fetch



PV surface air shaft



Plumbing connection

14. Installation Examples



