



Installation guide

SOPRASOLAR[®] FIX EVO PVC/TPO

SOPRASOLAR[®] FIX EVO TILT PVC/TPO

**SOLAR
ENERGY**
MANAGEMENT

SOPRASOLAR
by SOPREMA

Overview

Who are we?



OUR EXPERTISES AND PROJETS ↙
soprasolar.com



Since its founding in 1908, **SOPREMA®** has remained an independent group and is now one of the world's leaders in waterproofing, insulation, and building protection.

The company installs millions of square meters of waterproofing, roofing, insulation, and protection systems across the globe. **SOPREMA®** plays a key role in many large-scale projects, such as the European Parliament in Strasbourg, Wembley Stadium, Ferrari World, and the George Washington Bridge.

With a workforce of 10,452 and sales reaching 4.82 billion euros in 2022, **SOPREMA®** has established a strong industrial and commercial presence worldwide. The company operates 123 plants, including around 20 in France, and has over 120 subsidiaries.

SOPREMA® is active in 100 countries, with 17 R&D centers focused heavily on Sustainable Development and 22 training centers across 8 countries.

SOPREMA®'s product offerings are the result of close collaboration between its marketing department and R&D centers, ensuring innovative solutions that meet market needs and current standards. With **SOPREMA®**, you can find the right solution for every type of project.

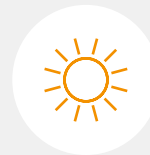
For more than 30 years, **SOPREMA®** has been committed to minimizing the impact of its products and activities on the environment and human health throughout the entire lifecycle of a structure, from construction to operation and eventual demolition.

SOPREMA®'s R&D policy emphasizes Sustainable Development by reducing environmental impact through the use of renewable resources in production and within its plants, as well as through innovations focused on health and safety.



Founded in 2008, **SOPRASOLAR®** has become the leading company in France for solar waterproofing. With its technical and commercial expertise, **SOPRASOLAR®** supports contractors and businesses looking to integrate energy-generating capabilities into their flat roofs.

Both in France and internationally, **SOPRASOLAR®'s** achievements include:



over **900 MWp**
installed



over **5,000**
references



over **15 million m²**
of flat roofs equipped on
ribbed steel deck, wood, and
concrete substrates, both in new
construction and renovation.



Introduction

→ Note

The recommended systems shown here are examples. Each case is unique, so it is essential to consult **SOPRASOLAR®** for every project to validate the solution that best meets the building's needs.

The application of waterproofing systems must be carried out according to industry best practices and in compliance with our technical requirements.

📄 Specifications

Load-bearing element ⁽¹⁾	 Ribbed steel decking (t.A.N.) And plywood panels ⁽¹⁾	 Concrete
	PVC/TPO Waterproofing Membrane	Single-layer
Minimum roof slope	3 %	1 %
Maximum roof slope	10 %	10 %

⁽¹⁾Reminder :

- Ribbed steel decking (T.A.N.), and plywood load-bearing elements must undergo specific sizing studies conducted by the supplier.

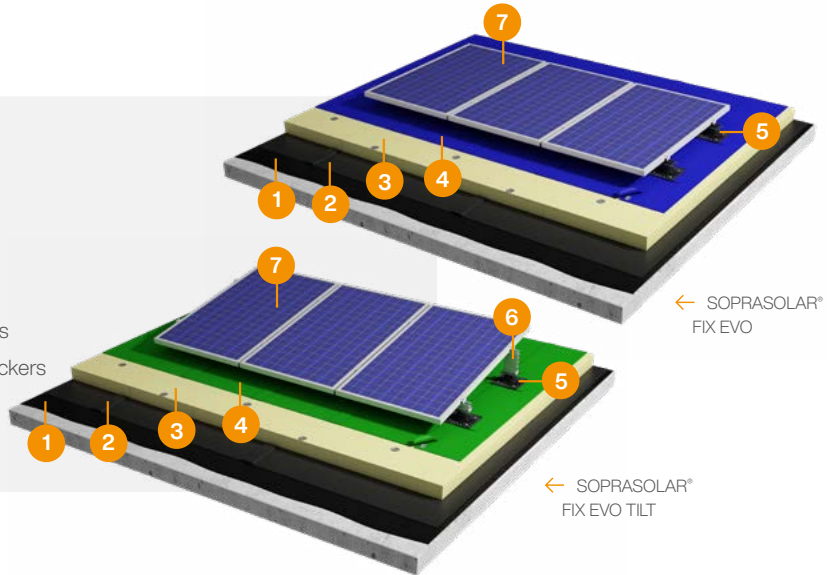
The **SOPRASOLAR® FIX EVO (TILT) PVC/TPO** system allows for the installation of modules in either portrait or landscape orientation..

SOPRASOLAR® FIX EVO PVC/TPO & SOPRASOLAR® FIX EVO TILT PVC/TPO systems.



Example: On concrete deck

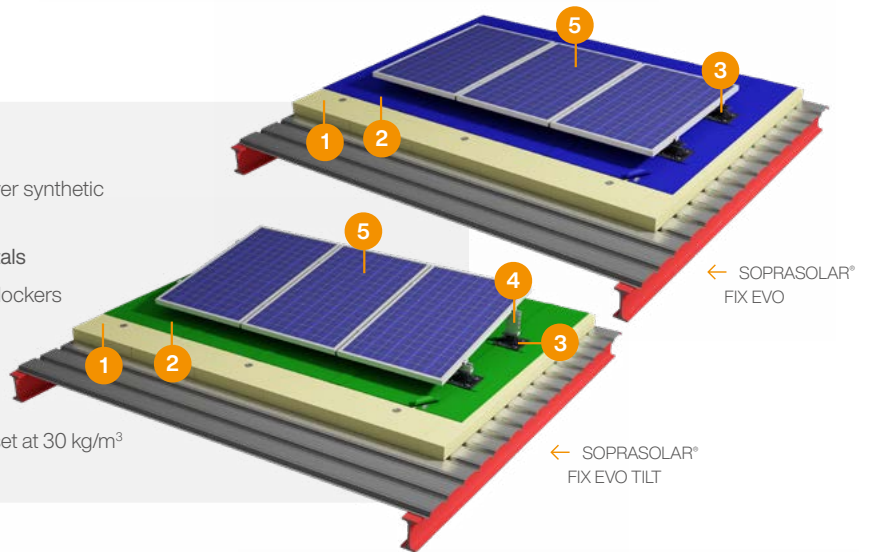
- 1 Cold Applied Primer
- 2 Fully bonded vapor barrier
- 3 Class C insulation
- 4 **FLAGON® PVC** or **FLAGON® TPO** single-layer synthetic waterproofing membrane
- 5 **SOPRASOLAR® FIX EVO PVC/TPO** pedestals
- 6 **SOPRASOLAR® FIX EVO TILT** raisers and blockers
- 7 Crystalline photovoltaic modules



Example: On ribbed steel deck

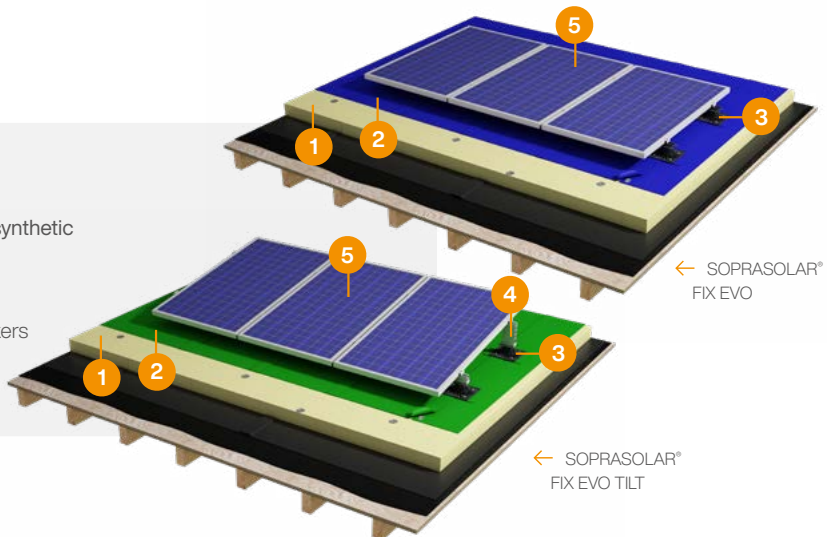
- 1 Mechanically fixed Class C insulation
- 2 **FLAGON® PVC** or **FLAGON® TPO** single-layer synthetic waterproofing membrane
- 3 **SOPRASOLAR® FIX EVO PVC/TPO** pedestals
- 4 **SOPRASOLAR® FIX EVO TILT** raisers and blockers
- 5 Crystalline photovoltaic modules

Compressibility class C : this term only makes sense to the French or anyone familiar with our DTU. A parallel with the insulation density exists, which is set at 30 kg/m³ for EPS and PU and 130 kg/m³ for rockwool.



Example: On plywood deck

- 1 Mechanically fixed Class C insulation
- 2 **FLAGON® PVC** or **FLAGON® TPO** single-layer synthetic waterproofing membrane
- 3 **SOPRASOLAR® FIX EVO PVC/TPO** pedestals
- 4 **SOPRASOLAR® FIX EVO TILT** raisers and blockers
- 5 Crystalline photovoltaic modules



You are at stage



1 Preparation



List of recommended documents

- SOPREMA®** Calculation Note on Fastener Density
- This Installation Guide for **SOPRASOLAR® FIX EVO (TILT) PVC/TPO**
- The Execution Drawing (EXE) issued by **SOPRASOLAR®**



List of tools required for implementation

- Standard Roofer's Tools
- Hot air gun (Leister)
- 40 mm and/or 20 mm nozzle
- Wire brush (It is crucial to keep the nozzles clean and properly open, not pinched)
- Silicone (soft) pressure roller for PVC and Teflon (hard) roller for TPO
- Tester (Used to mechanically check the welds. This is mandatory for every weld performed)
- Knee pads (for welding supports while kneeling on the waterproofing)
- Measuring tape and long tape measure
- Chalk line
- Torque wrench for M8 hex socket screws or screwdriver with torque adjustment
- Optional: glass suction cup for handling modules
- Standard Electrician's Tools
- Lifting equipment for hoisting pallets of modules, pallets of support cartons, and small tools



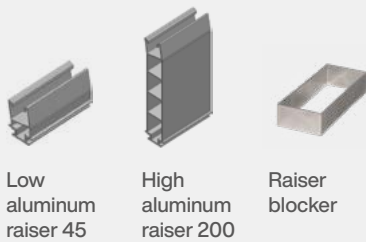
○○ Description of the various components



SOPRASOLAR® FIX EVO PVC/TPO Pedestal

Adjustable polyamide pedestal reinforced with fiberglass, featuring a Flagon® PVC or Flagon® TPO plate.

Accessories for the TILT Version

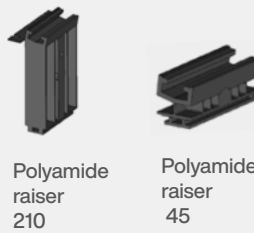


Low aluminum raiser 45

High aluminum raiser 200

Raiser blocker

ALUMINIUM raiser kit



Polyamide raiser 210

Polyamide raiser 45

POLYAMIDE raiser Kit

The raisers ensure the connection between the **SOPRASOLAR® FIX EVO PVC/TPO** pedestals and the photovoltaic modules while creating a 10° tilt.

The raiser blocker are used to secure the aluminum raisers to the top of the **SOPRASOLAR® FIX EVO PVC/TPO** Pedestal.

Photovoltaic Module Mounting Accessories



Universal clamp

This reference is called «universal» because it fits photovoltaic module frames ranging from 30 mm to 42 mm.

Components for securing photovoltaic modules:

→ To the pedestals for the **SOPRASOLAR® FIX EVO PVC/TPO** version

→ To the raisers for the **SOPRASOLAR® FIX EVO TILT PVC/TPO** version



Photovoltaic Module

Rigid module with an aluminum frame.

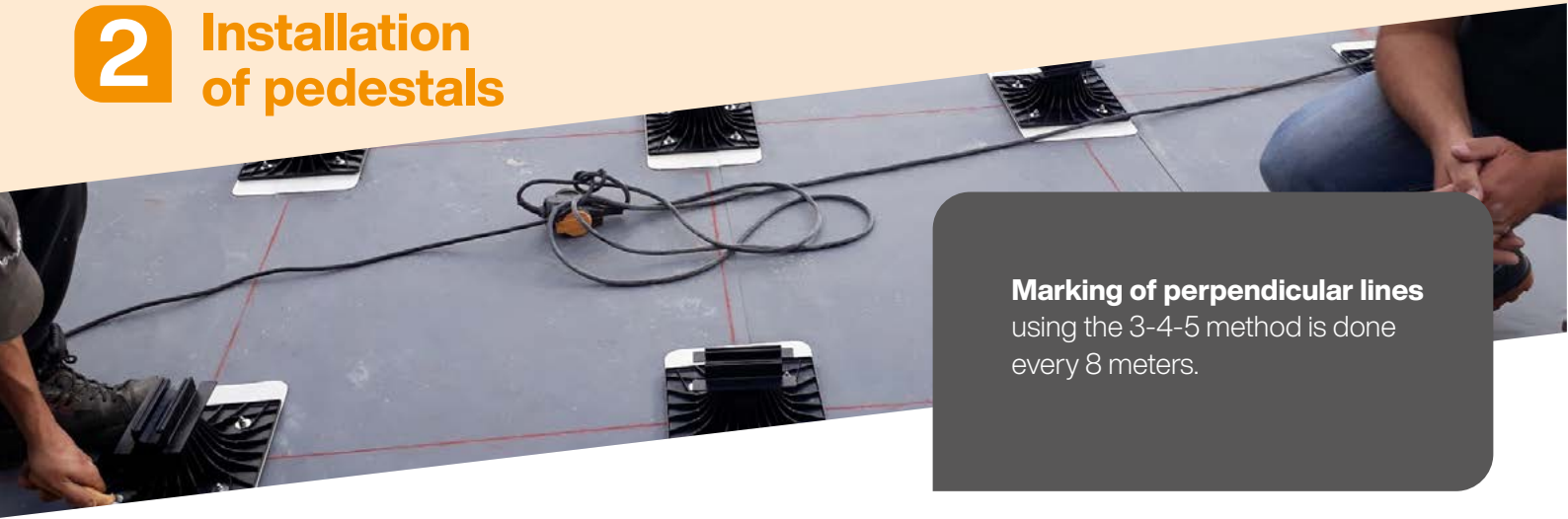


The benefits

- + No waterproofing penetration at the pedestals
- + No thermal bridge at the pedestals
- + Easy installation
- + Height-adjustable pedestals
- + Associated to built-up roof systems subjected to successful wind uplift tests
- + Ballast-free
- + Broof t3 certified *

* Reach out to your SOPRASOLAR contact to learn more about the conditions.

2 Installation of pedestals



Marking of perpendicular lines using the 3-4-5 method is done every 8 meters.

Marking the location of the pedestals

Before proceeding further on worksite, it is essential to print the execution plan (EXE) in the appropriate format (as indicated on the plan; A3 to A0) for better readability.

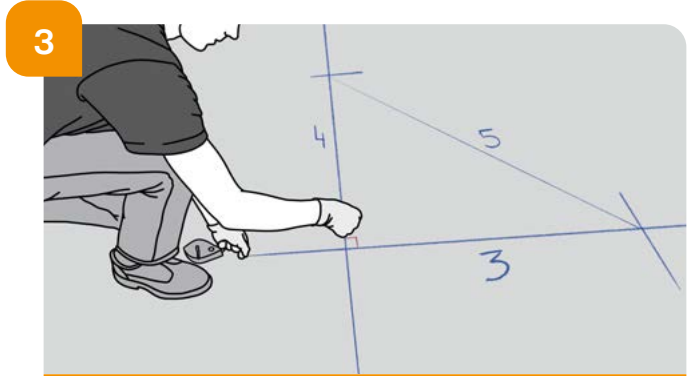
For roofs with a surface area greater than 3000 m², it is advisable to consult a surveyor for marking the pedestals.

SOPRASOLAR® is available for any technical inquiries.



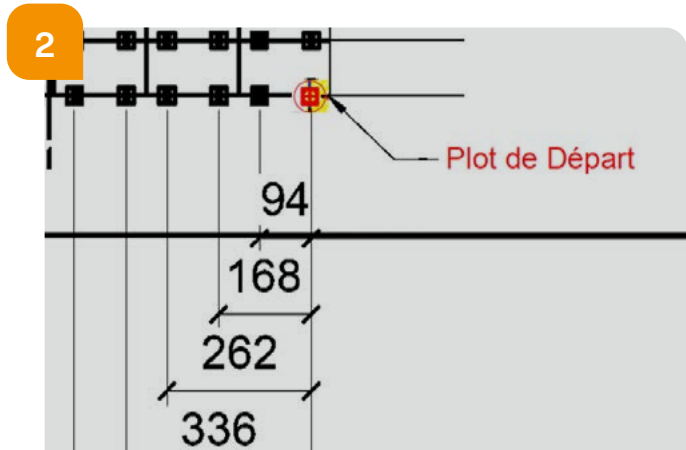
1

→ Verify the dimensions of the roof and the location of the hindrances in relation to the EXECUTION DRAWING before any marking.



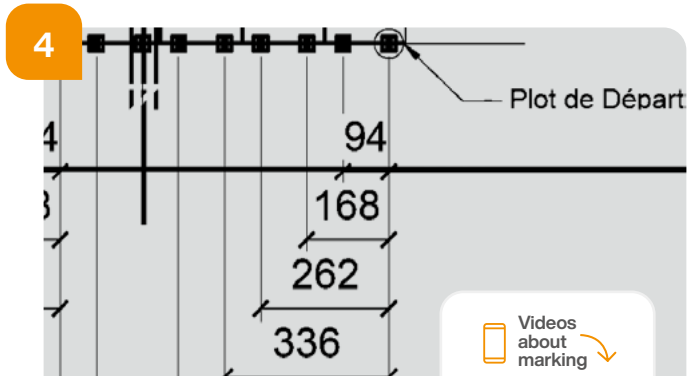
3

→ Square the installation area using a chalk line with the 3-4-5 method.



2

→ Check the positioning of the pedestral of reference using the EXECUTION DRAWING.



4

→ Marking of perpendicular lines using the 3-4-5 method is done every 8 meters.



→ Welding of the SOPRASOLAR® FIX EVO PVC/TPO Pedestal

↓ Welding Temperatures for Membranes

Synthetic Membrane	Temperature
PVC	350°C TO 550°C
TPO	250°C TO 450°C

Minimum Air Temperature: 10°C



Note

Clean the welding area with soapy water, then prepare it using **FLAG PVC CLEANER** or **FLAG TPO CLEANER**, depending on the type of membrane. These products should be applied only to the weldable parts of the flange.



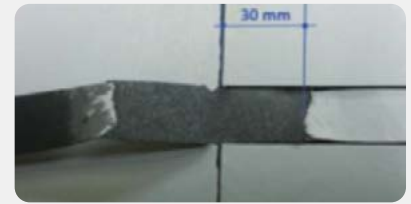
↓ Peel test on sample after each restart of the hot air gun



→ Cut 3 distinct strips 15 mm wide each, from the two welded membrane samples.



→ Pull out on each side of the weld



→ The grid should appear and must be at least 30 mm in length

5



→ Welding on one side of the flange with a minimum width of 3 cm.

7



→ Once cooling, check the quality of the welds using the tester.

6



→ Weld the other side of the flange with a minimum width of 3 cm.

8

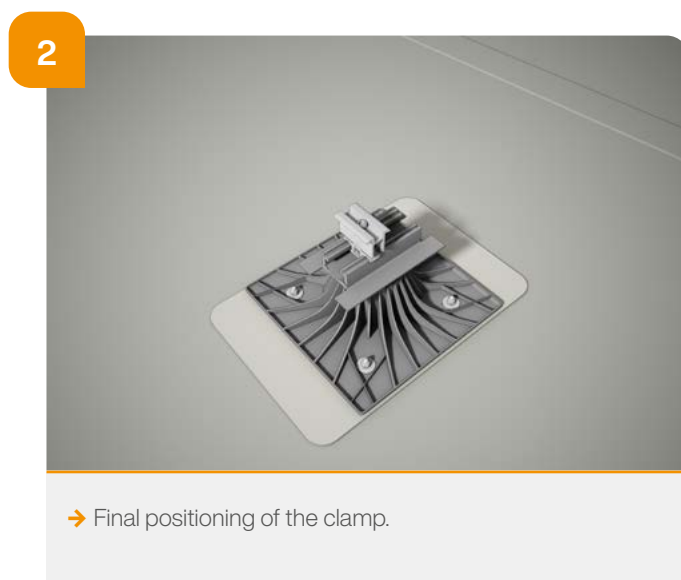


→ Overview of the roof once the pedestals are installed (There is no recommended orientation for the flanges of the pedestals in relation to the direction of the roof).

3 FIX EVO CLAMPS



→ Installation of the **clamps** on the **SOPRASOLAR® FIX EVO** pedestal



4 Raisers, blockers (TILT) and clamps

ALUMINUM



It is essential to identify the direction of module inclination on the **SOPRASOLAR®** execution drawings to properly position the raisers.

→ Installation of **raisers** and **blockers** ALUMINIUM (TILT version)



4 Raisers (TILT) and POLYAMIDE clamps



It is essential to identify the direction of module inclination on the **SOPRASOLAR®** execution plans to correctly position the raisers.

→ Installation of the POLYAMIDE raisers (TILT version)

1

→ Slide the small raiser until the self-locking device engages.

2

→ Slide the large raiser until the self-locking device engages.

3

→ Slide the clamp along the raiser upper part.

4

→ Installation complete.

5 Installation of photovoltaic modules



Important

- Two individuals are required to handle a module.
- The presence of an electrician on worksite is essential for the electrical connection of the modules
- Electrical cables and cable ties for holding the cables in place are not provided by **SOPRASOLAR®**



Connection Loop

(To be performed by a qualified person)

→ The cable extensions for connection to the inverter must be secured with cable ties on the return edge of the panel frame to minimize the effects of induced loops. The fins of the pedestal can be drilled to allow a Colson-type cable tie to pass through, securing the cable as it is positioned on the fin

Important : No cable or connector should come into direct contact with the waterproofing membrane.



Handling PV Modules

Important : Modules should only be secured and connected in the presence of a qualified electrician.

Handle the modules with the utmost care by following these guidelines:

- Use both hands when handling the modules, and never use the junction box as a handle.
- Avoid applying any loads or stress to the modules, and do not step on them.
- Keep the electrical connectors clean and dry; ensure they do not come into contact with dirt or moisture.



Positioning of the Modules

Important : Do not attach modules to the pedestals until the electrician has connected them to adjacent modules. Modules should only be secured and connected by a qualified electrician.

→ Position the modules on the pedestals. Adjust the position of the modules according to the «system plan view» available in the EXECUTION DRAWING title block.



Connection and grounding

(To be performed by a qualified electrician)

- Pre-position the subsequent modules on the pedestals;
- Connect the connectors of the adjacent modules;
- Ground the modules.



Tighten the clamps

→ Lock the position of the modules by tightening the brackets on the raisers with a torque of $14 \pm 2 \text{ N.m}$.

You are at stage 1 2 3 4 5 6

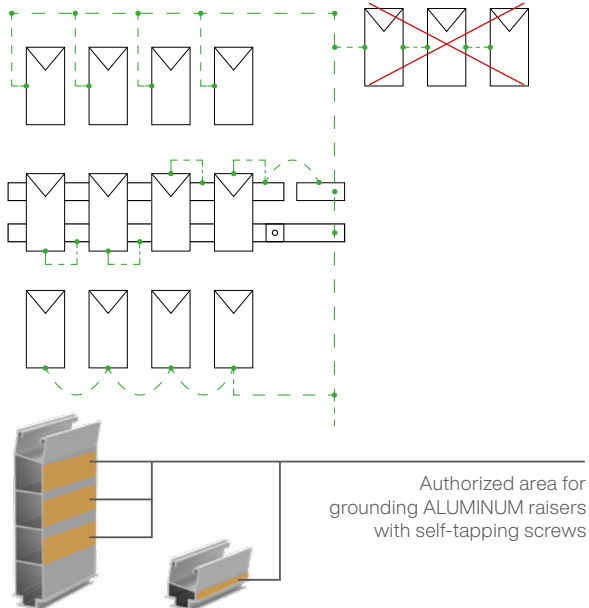
6 Connection and grounding



→ Connection and grounding

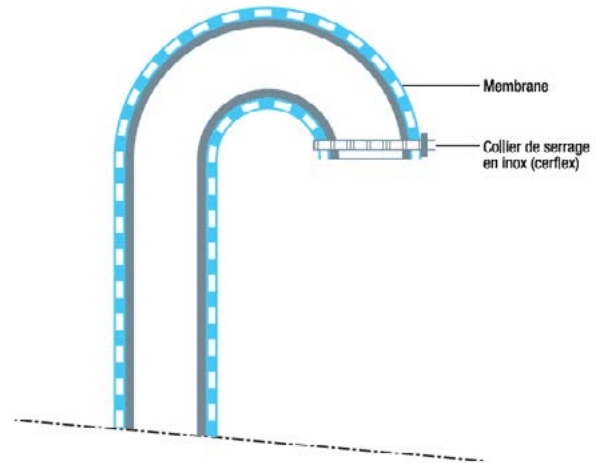
↓ Principle of grounding photovoltaic modules, raisers (only for TILT ALUMINUM version), and cable trays

- To be performed by a qualified person.
- Grounding of polymer raisers is not required.

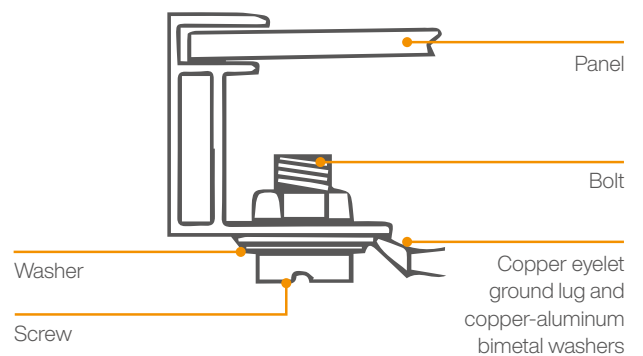


- a.** Connect the modules to each other using the connectors.
- b.** Ensure the grounding of the frame of the photovoltaic modules as well as the raisers (ALUMINUM version only):
 - Do not drill into the modules ;
 - Always use the module frame's existing mounting holes.
- c.** Elevate the connectors and cables by attaching them to the module frames to prevent them from resting on the waterproofing or in areas where water might pool.
- d.** Ground the cable tray if it is metallic. It is also necessary to connect all other metallic components on the roof to the same grounding potential.

↓ Hook for routing cables through the roof



↓ Cross-section view for grounding connection



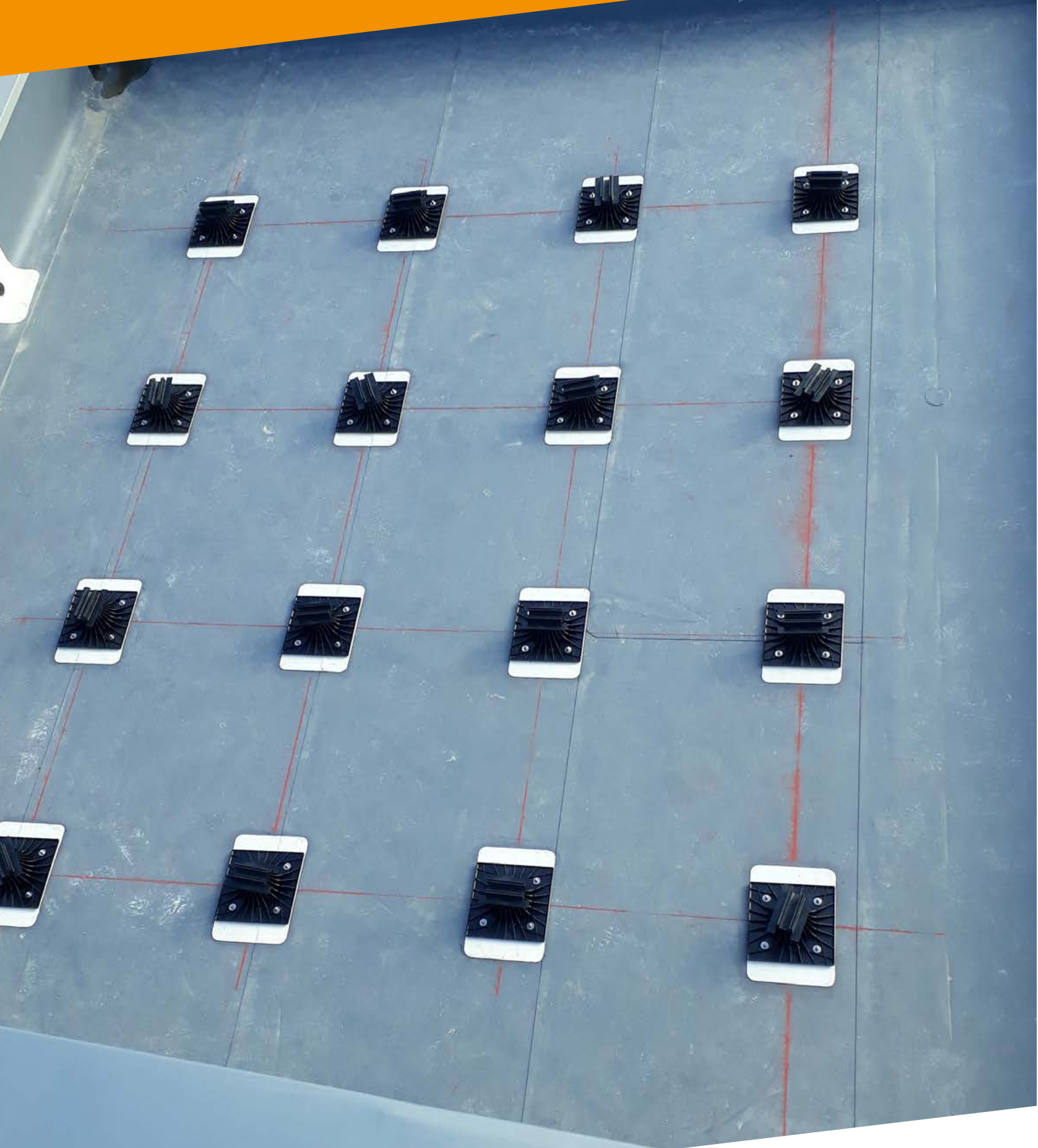
Alternative solution

It is also possible to use other systems specifically developed to save time during installation.

These procedures are not explicitly validated by the standard. The use of these accessories must be approved by the site inspection office and the module manufacturer.



Self-Inspection



Self-Inspection Checklist for SOPRASOLAR® FIX EVO (TILT) PVC/TPO System

Project Name:	
Location:	
Company Responsible for Implementing SOPRASOLAR® FIX EVO (TILT) PVC/TPO Pedestals:	
Date of Process Implementation:	Air Temperature:
Name of the Work Supervisor:	
Date of Self-Inspection:	Signature:



Self-Inspection of SOPRASOLAR® FIX EVO (TILT) PVC/TPO pedestal installation process

The following self-inspection procedure must be completed and submitted to the project management team at the end of each day of implementation. This form should be accompanied by an annotated plan showing the inspected areas, along with supporting photographs.



Assessment of the waterproofing system (supporting the pedestals)

- Ensure the waterproofing system has been approved by the project management team.
- Verify that the membrane is suitable for welding (follow the implementation timeline according to ATEX case a or ETN).
- Confirm that the existing waterproofing type (PVC or TPO) is compatible with the delivered pedestals.
- Check that the air temperature is above 10°C.
- Clean the area to be welded with FLAG TPO CLEANER or FLAG PVC CLEANER.

Preparation Before Marking

- Verify the SOPRASOLAR® execution drawing with the project management team.
- Print the latest version of the execution drawing in the largest format possible.
- Check the dimensions of the roof and the location of penetrations based off the execution drawing.

Marking

- Mark the positioning of the pedestals according to the instructions in the installation guide.
- Transfer the measurements from the execution drawing onto the roof accordingly.
- Check the squareness of the installation using the 3-4-5 rule.

Electrical Supply

- Ensure that the electrical supply meets the requirements of the welding equipment (sufficient and consistent power output).

Peel test

- Perform a peel test between the pedestal plate samples from the boxes and leftover membrane material. This test should be done after each restart of the hot air gun.

Installation of SOPRASOLAR® FIX EVO (TILT) PVC/TPO Pedestals

- Weld the pedestals according to the instructions in this Installation Guide (welding temperature based on the membrane type, minimum weld width: 3 cm).
- Visual checking of the welds (look for material runoff at the edges and check for any signs of overheating, yellowing, or early signs of carbonization).
- Conduct a mechanical check using a tester.

Installation of raisers (TILT version) and clamps

- For the tilted version (SOPRASOLAR FIX EVO TILT), verify the installation of the raisers and the raiser blockers according to the execution drawing.
- Check the tightening of the clamps, securing the photovoltaic modules.

Installation of SOPRASOLAR® FIX EVO PVC/TPO and SOPRASOLAR® FIX EVO TILT PVC/TPO



SOPREMA Group, at your service

Are you interested in **Soprasolar®** systems?

Submit your
project online

Find our **videos** and
technical documentation

Do you have technical questions about
the implementation of our systems?



Would you like to stay updated on
our latest news and be the first to know
about our newest products?

