



Installation and operating instructions for the following models

60Pxxx-V / 60Mxxx-V / 72Pxxx-V / 72Mxxx-V / 60Pxxx / 60Mxxx / 72Pxxx / 72Mxxx

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1. INTRODUCTION

1.1 Basic information:

This installation and operating instruction applies to the following models:

- 60Pxxx-V, 60Mxxx-V, 72Pxxx-V, 72Mxxx-V
- 60Pxxx, 60Mxxx, 72Pxxx, 72Mxxx

1.2 Service Manual:

- This manual describes the mounting and electrical connection of RECOM SILLIA modules in a photovoltaic field. Any installation must follow the same rules in this document.
- Instructions are intended for installers, operators and persons assigned by the operator. All the personnel performing the installation of the photovoltaic modules must have the qualifications required for the implementation of a photovoltaic system.

Any implementation not respecting the present instructions will not be taken as guarantee by the company RECOM SILLIA.

1.3 Certification:

RECOM SILLIA modules are certified by:

CERTISOLIS TC

Savoie Technolac – BP 364
39, Allée du Lac de Côme
73372 LE BOURGET DU LAC
T : +33 (0)4.79.68.56.00
F : +33 (0)4.79.68.56.06
Website : certisolis.com
Email : contact@certisolis.com



Modules photovoltaïques
CERTISOLIS EP-01-04

NF EN 61215:2005

NF EN 61730-1-2:2007

Fabrication contrôlée

www.certisolis.com

This mark certifies:

- the compliance of the PV module with standards NF EN 61215 or NF EN 61646 and NF EN 61730-1 and 2
- compliance of the PV module with the Particular Requirements CERTISOLIS EP-01
- the values of the characteristics announced in this sheet

For any useful purpose, the certificates can be downloaded on the site www.certisolis.com .

1.4 Warranty and Liability:

The general conditions of sale and the conditions of guarantee of the company RECOM SILLIA apply.

1.5 Storage and Handling:

- Modules should be stored in a dry, ventilated area.
- Manipulate the modules by the frame, two or more people are required.
- Do not handle the modules with the connecting cables.
- Do not walk on the modules
- Do not use tools that could damage the back or front of the module.

2 SECURITY

2.1 Conditions and duties of the operator and the installer:

The operator and installer must ensure that:

- Existing national standards and guidelines are followed,
- The assembly is carried out by people with the required skills,
- The electrical connection is made by professionals in electronics,
- Installation professionals are able to assess all the tasks and possible hazards of a photovoltaic installation,
- The installation instructions are an integral part of the product and must be available during assembly,
- Installation and safety instructions are known to all operators before installation,
- The installation and handling tools are suitable for the installation,
- Only components suitable for photovoltaic systems must be used,
- The modules must not be in the vicinity of gas or flammable products,
- No artificial sunlight should be concentrated on the module.
- The module is not dismantled, that no contained parts are removed.

2.2 Safety instructions:

- The safety instructions listed below are an integral part of the installation instructions and are of paramount importance for the handling of the modules.
- Ensure that the module load is compatible with the entire structure.
- Check the mechanical integrity of RECOM SILLIA modules before assembly (modules in perfect condition).
- Use suitable fastening systems that can withstand additional occasional loads (eg snow, strong wind, etc.).
- Ensure that the other components of the system have no mechanical or electrical impact on the photovoltaic modules.
- Work in a dry environment with dry modules and tools.
- Optical protection should cover the front of the module when installing or servicing the electrical circuit.
- Do not drill a hole in the glass and in the aluminum frame.
- The modules must not be installed in the vicinity of flammable sources of gas, vapors or dust (eg fuel stations, gas tanks, pressure painting equipment ...). In the case of roof installation, the modules must be fitted with a fire-resistant system, evaluated in accordance with the application.
- Keep a copy of the record in the immediate vicinity of the photovoltaic system

3 MOUNTING

Reminders:

Application class: A

Safety class: II

Maximum System Voltage: 1000V

See also the corresponding technical data sheet.

3.1 General assembly instructions:

- Ensure that all applicable accident prevention regulations are followed.
- Use a mounting system allowing sufficient air space (RECOM SILLIA recommends a minimum air gap of 40mm under the modules) in order to ensure a good ventilation of the modules.
- RECOM SILLIA recommends a rail-clamped system (Fisher Solarfix type) for the installation of its photovoltaic modules.
- Tightening torque of 3 Nm, maximum 6 Nm.
- For any use of another system, refer to the manufacturer's data.

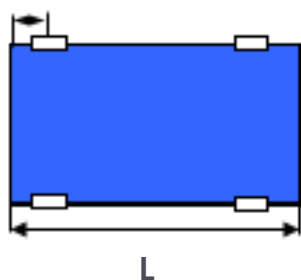
- The mounting bracket must be made of aluminum-compatible materials in the RECOM SILLIA module frame.
- RECOM SILLIA recommends the use of certified roof mounting and / or integration systems. RECOM SILLIA is continuously developing its partnerships with system suppliers, and the list of systems that have obtained technical validations with our modules is available at www.recom-sillia.com. Nevertheless, other mounting systems can be used in compliance with this document and the product sheet of the PV module concerned.

3.2 Set Modules RECOM SILLIA:

- The installation must comply with the recommendations of the suppliers of photovoltaic fixing systems.
- Secure RECOM SILLIA modules against the risk of slipping and falling.
- Do not drop the modules.
- Do not drop anything on the modules.
- **Do not walk on the modules.**
- Handle two-person modules at two opposite points on the frame.

3.2.1 Installation of RECOM SILLIA modules:

RECOM SILLIA recommends a clamping of the modules according to the diagram below:



$l = 1/3 - 1/4 L$ for 72P/Mxxx-V and 72P/Mxxx
 $l = 1/4 - 1/5 L$ for 60P/Mxxx-V and 60P/Mxxx

RECOM SILLIA photovoltaic modules can be installed vertically or horizontally.

A fixing only on the short side of the modules is only possible for Modules 60x and slides without fixing the modules. The maximum pressure / vacuum value for this configuration is 2400 N / m².

Warning

- RECOM SILLIA modules must rest on the 4-point support with the clamping elements adapted to the height of the aluminum profile.
- The thermal expansion of the frames must be taken into account (recommended distance between two modules: 5 mm)
- Take into account the mounting materials in order to avoid the risk of corrosion at the points of contact between the different metals.

3.2.2 Electrical connection (**Danger of death due to electric shock!**)


Under normal conditions, a photovoltaic module may produce currents and / or voltages higher than those given at STC (standard test conditions). It is therefore appropriate that the values of I_{sc} and V_{oc} marked on this module be multiplied by a factor of 1.25 for the dimensioning in voltage and current of the components and conductors and for the dimensioning of the fuses and commands connected to the outputs of the photovoltaic module.

- The modules are delivered with cables and electrical connectors.
- Ensure that the other cables and connectors in the system comply with the applicable regulations and are in perfect condition.
- Protect cables from damage.
- Solar modules must not be in contact with stagnant water.
- Electrical connections should not be based on a water flow plan.
- RECOM SILLIA recommends that the junction box cable presses do not face upwards in the direction of inclination
- Caution danger due to continuous electric current! Risk of severe burns and electric arc injuries! (refer to §2.2)
- Do not disconnect the connections when the system is in charge (power generation, see §2.2).
- Provide sufficient protection to avoid contact with conductive parts.
- Use only electrically insulated tools.

3.2.3 Wiring

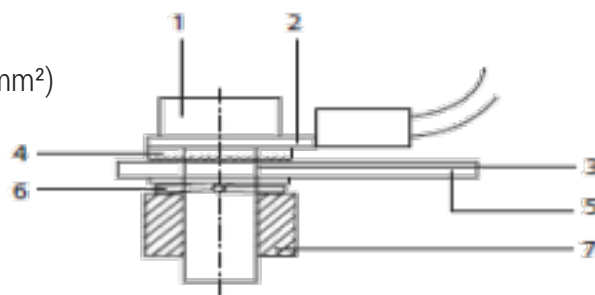
- RECOM SILLIA modules are designed for serial cabling.
- The modules are delivered with 2 cables / connectors (section 4mm² / operating temperature -40 ° C / + 115 ° C)
- It is strictly forbidden to replace the cable (s) and / or connectors (s).
- When using an extension cord:
 1. The cable must be suitable for photovoltaic solar applications and must respect the characteristics mentioned above,
 2. The connectors should be of the same brand / type as the module connectors. In case different brand / type usage is allowed, RECOM SILLIA recommends obtaining compatibility certificates from connector providers.
- When wiring the modules in series, make sure that the polarity of the connection is correct.

3.2.4 Grounding

- Aluminum frames of the RECOM SILLIA modules must be grounded in accordance with national regulations, regulations and standards.
- A hole Ø6 identified by a ground symbol  is present on each side of the module.

RECOM SILLIA recommends the following assembly:

- 1: fixing screws
- 2: terminal with grounding cable (recommended 16mm²)
- 3: drilling for grounding
- 4: toothed washer
- 5: module frame
- 6: Washer Grower
- 7: Nut



To ensure correct grounding of the modules, proceed as follows:

- Place the toothed washer (4) and the grounding lug (2) on the earthing hole (3).
- Install the setting screw (1)

- Place the washer (6) on the screw (1), then tighten the nut (7), tightening torque about 3Nm.

In the case of use of a technique other than that described above, it is the responsibility of the operator and / or installer to verify that it complies with the specific requirements of this alternative, the national standards and guidelines in force.

We recall to this effect that:

- the alumina oxide layer has to be traversed to guarantee the electrical connection with the aluminum of the frame,
- the materials used (other than the aluminum of the frame) must be compatible from an oxidation-reduction torque point of view to ensure the integrity of the elements during the service life.

4 ELECTRICAL SPECIFICATIONS

The characteristics of RECOM SILLIA modules are available at www.recom-sillia.com.

All the modules in the range are designed to be wired in series, in a loop whose total **voltage must be less than the maximum of 1000V**.

It is the responsibility of the operator and / or the installer to check and apply the applicable national standards and guidelines (eg UTE C15-712-1, ...) for determining the number of modules to be wired in series.

In the absence of such specifications, the operator and / or installer will determine the number of modules in series, taking into account the influence of the temperature on the voltage of the photovoltaic modules, in particular when the voltage of the module increases at low temperature.

Fusible overcurrent protection may be required. Refer to applicable national standards and guidelines. RECOM SILLIA recommends an overcurrent protection fuse of 15A max.

5 MAINTENANCE

- RECOM SILLIA solar modules require very little maintenance.
- Periodic cleaning of modules is recommended to ensure optimum operation of the solar generator.
 1. An inclination of more than 10 ° is recommended to ensure that the modules are self-cleaning by rainwater runoff.
 2. For an inclination of less than 10 °, the operator must provide regular cleaning of the modules in order to prevent the accumulation of dirt on the modules. The cleaning method must not cause any stress on the modules.

When cleaning the modules:

- Use only neutral, non-abrasive, non-corrosive cleaning fluid.
- Use water at a temperature equivalent to that of the modules.
- Wipe the surface of the modules with water with a soft, clean cloth.