



IVENDO Solar
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14-200 Iława

Manual for system installation on a flat roof

KDP-BIFACIAL-BK-B

These instructions contain information on how to assemble a superstructure for for 4 horizontally arranged modules.

Materials:

- Stainless steel A2
- Aluminum 6060 T66
- Structural steel with Magnelis coating S320 ZM430

It is essential that you familiarize yourself thoroughly with the instructions and use them in accordance with the intended purpose.

Information about the security

Before starting the assembly work, you should familiarize yourself with the following safety instructions, which will reduce the risk of an accident.



Attention! The setup and connection should be performed by qualified personnel with the appropriate authorizations. The general safety rules must also be observed.



Attention! During the work, it is necessary to observe the applicable national and European standards, especially the electrical installations. It is also necessary to follow the instructions of the other components, e.g. the inverter.



Attention! Danger of falling from heights. The rules for working at heights and the necessary safety equipment such as harnesses and safety ropes must be observed.



Attention! Danger of falling objects. Special care must be taken. Before starting work, the assembly area must be appropriately secured to avoid hazards.



Attention! Warning of electric current. Be particularly careful when performing electrical work, especially when connecting modules and when setting up and connecting the inverter to the modules.

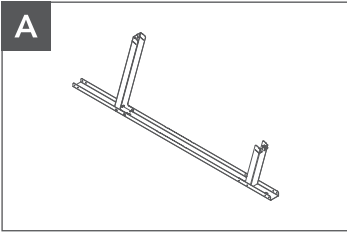


Attention! Warning about highly flammable materials. Photovoltaic modules, inverters and other electrical equipment should not be used near easily flammable materials.



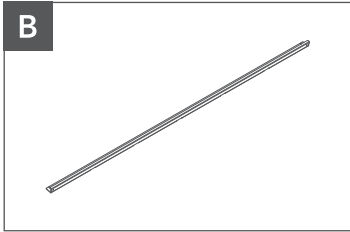
Attention! The assembly work must not be carried out by persons under the influence of alcohol or other intoxicating substances.

Elements list



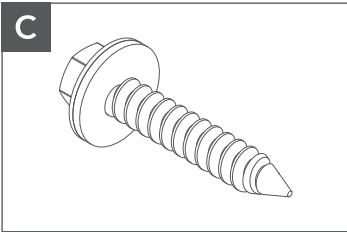
Mounting triangle

*Material: Coated
Steel Magnetism*



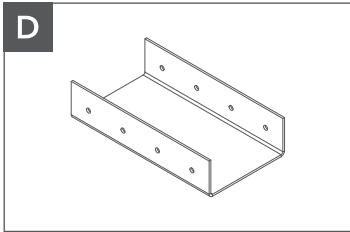
**Module support
Bifacial**

*Material: Coated
Steel Magnetism*



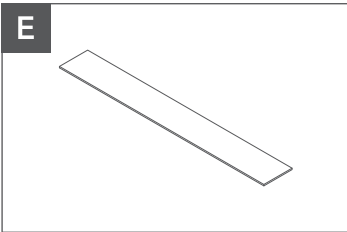
**Self-tapping
Screw**

Material: Stainless steel

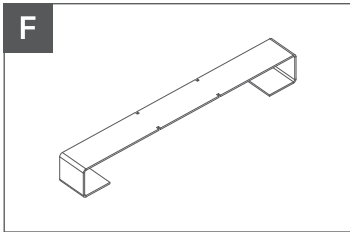


**Triangular connector
Mounting**

*Material: Coated
Steel Magnetism*

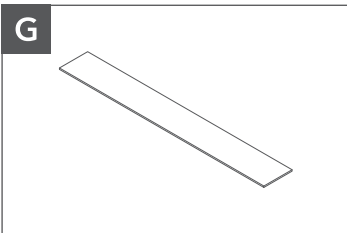


SBR rubber

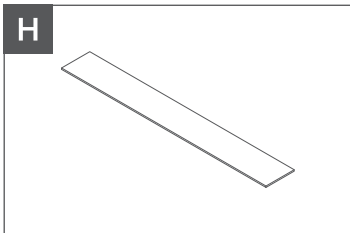


**Base underneath
Concrete block**

Optional



**SBR rubber with a
Length 1500 mm**



**SBR rubber with a
Length 300 mm**

Assembly instruction



Necessary tools:

- Allen wrench (size 5)
- Ring wrenches (size 13, 15 and 17 mm)
- Cordless screwdriver with Torque adjustment
- Cross-recess bits / attachments for the Cordless screwdriver (PZ)



Tightening torques:

- Tighten middle and end clamps with a tightening torque of 8.5 Nm
- Tighten M8 bolts and nuts with a tightening torque of 18 Nm.
- Tighten M10 bolts and nuts with a tightening torque of 36 Nm



Staffing for assembly:

- At least 2 persons



Assembly time:

- About 2 hours

Control and maintenance

During the installation work, it must be ensured that the photovoltaic system is used according to its intended purpose. All changes in the use of construction elements, including connection with elements that do not come from IVENDO Solar, the modification of the construction by welding, shortening, lengthening, drilling, etc., and increasing the load on the systems will result in the loss of warranty claims and may have a direct impact on the life of the systems and their safe use.

The technical inspection and maintenance of the mounting system should be carried out at least once every six months, special attention should be paid to:

- Bolted connections,
- The condition and connections of the electrical cables are checked,
- the visual condition of the PV modules (contamination, mechanical damage) is checked.

Assembly of the set

- 1 Before installation, the arrangement plan for the modules (Fig. 1) and the mounting triangles (Fig. 2) must be determined. and mounting triangles (Fig. 2). The method of fixing the substructure to the The method of fixing the substructure to the roof surface depends on the type of roof and is chosen individually.

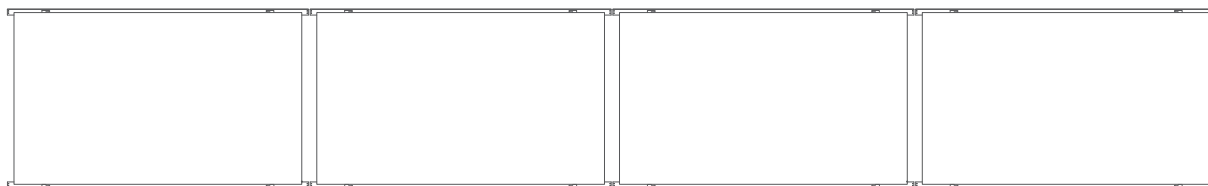


Fig. 1: Layout plan of the modules

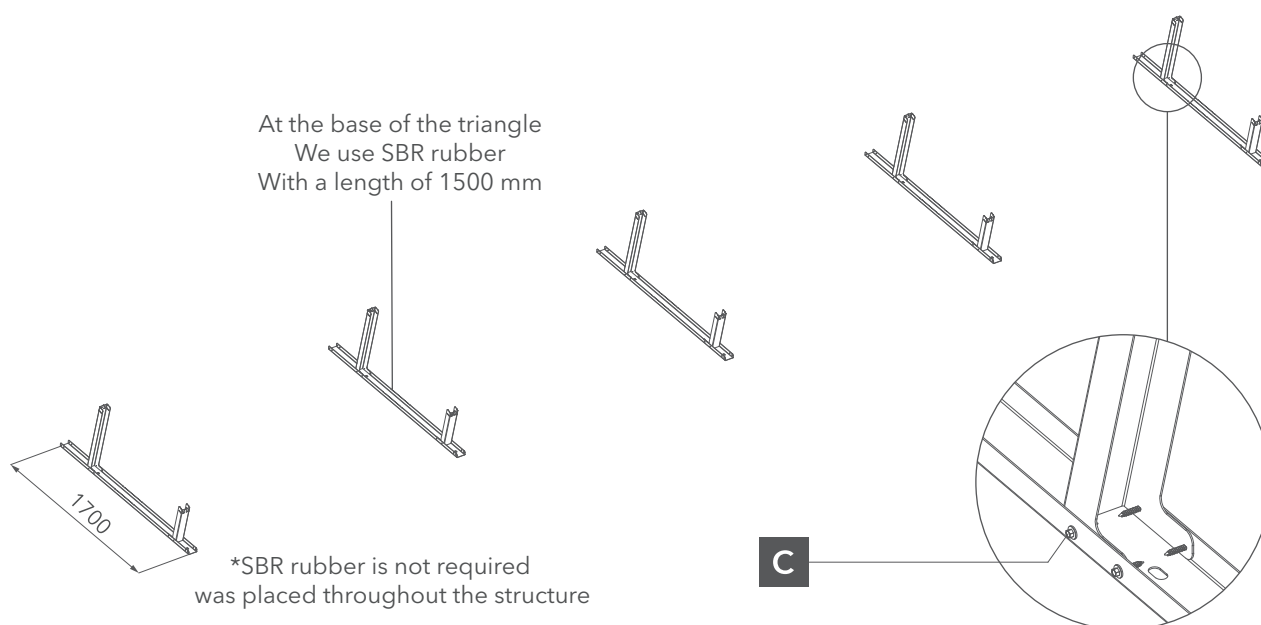


Fig. 2 Arrangement of the mounting triangles

- 2 SBR rubber should be placed under the lower base of the mounting triangle. Then the lower support of the module should be placed on the mounting triangle and screwed

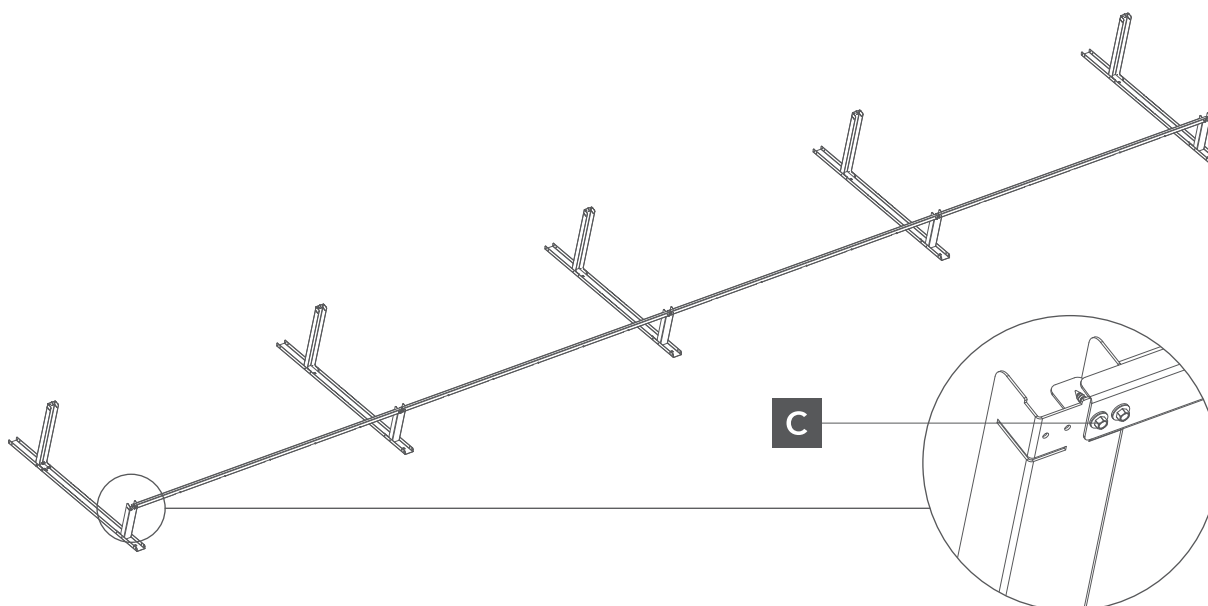


Fig. 3 Fastening the bracket to the mounting triangle

- 3** Insert the first, outermost photovoltaic module into the lower bracket of the module and insert the upper bracket holding it into the module and mount it with the mounting triangle.

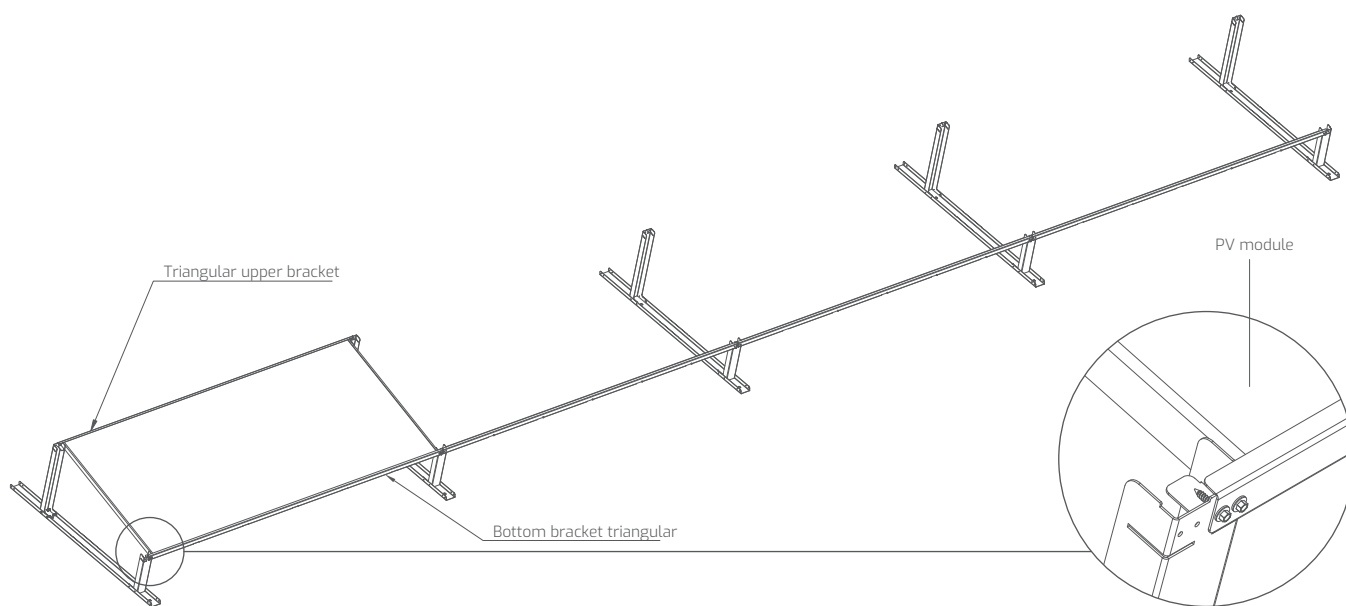
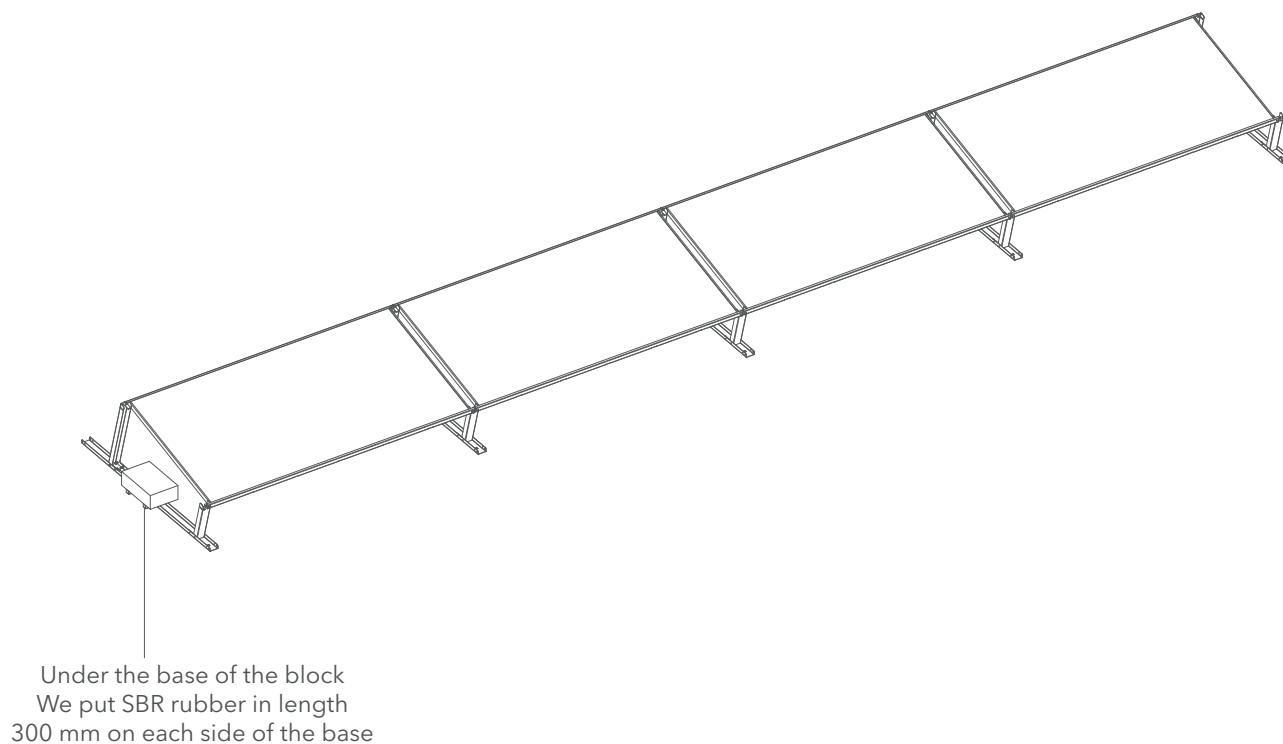


Fig. 4 Fastening the modules to the cathode rails

- 4** To stabilize the concrete block, it is recommended to use an underlayment under the concrete block.



- 5** If two or more rows of photovoltaic panels are required, the mounting triangles must be connected using a template (Fig. 5).

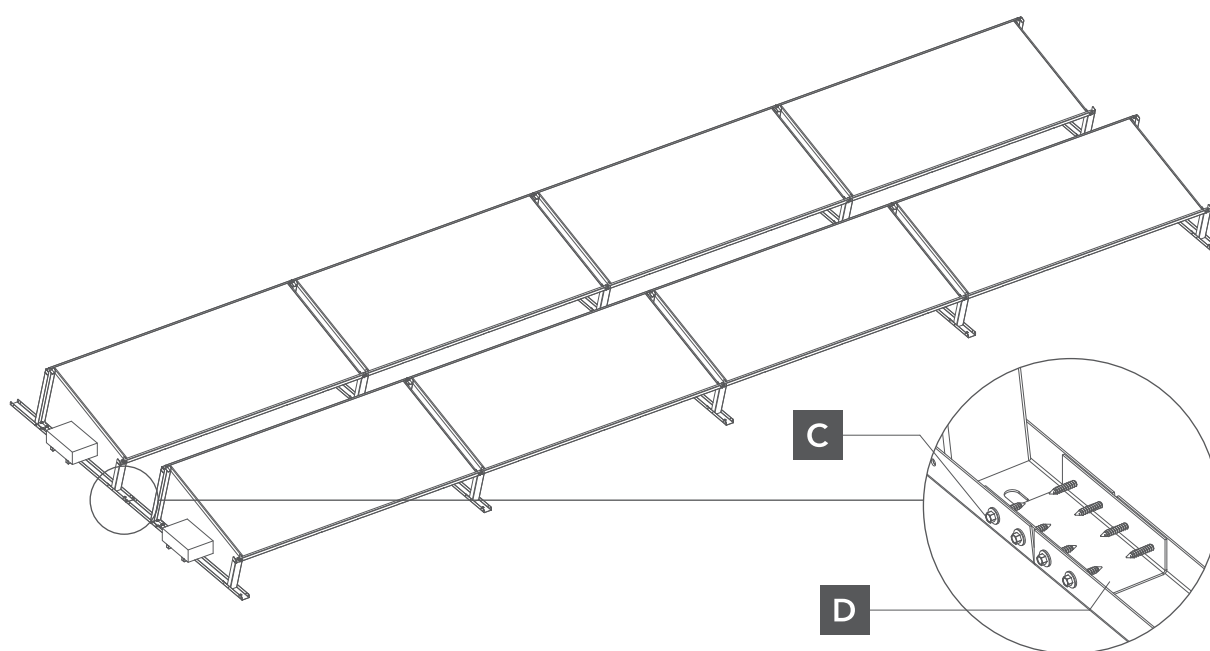


Fig. 5 Triangular arrangement with 1 bar.

Ballast distribution in wind zone I

- 6** The entire structure should be loaded with blocks. Place the blocks on the base of the mounting triangle. For a row of PV panels: 15 kg ballast per panel (Fig. 6).

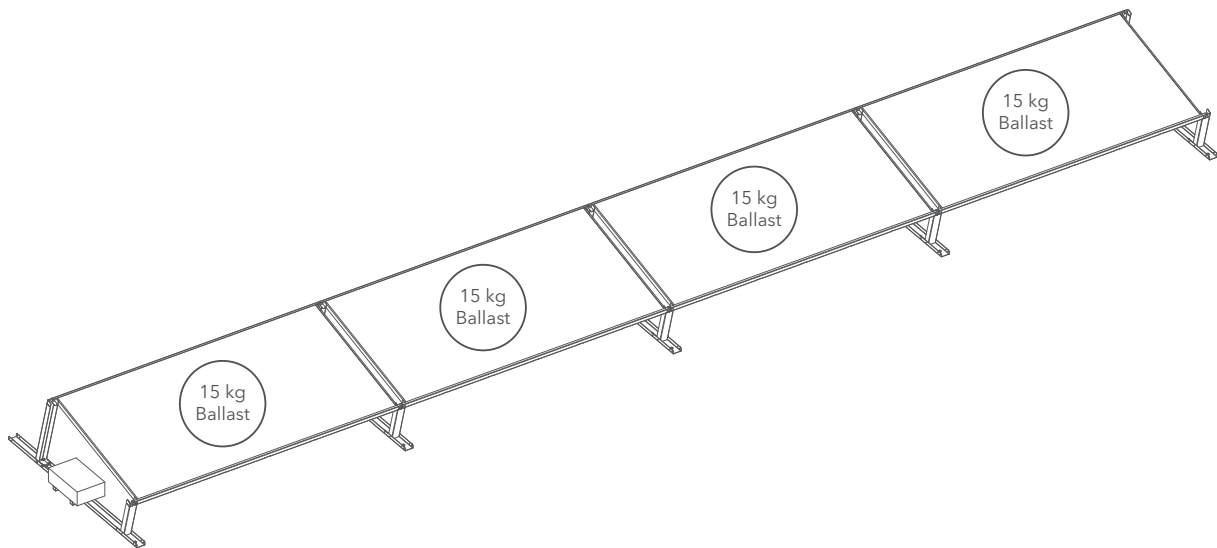


Fig 6. distribution of the ballast on the individual rows of photovoltaic modules.

- 7** Two rows of PV panels result in a ballast amount of 12.5 kg per panel (Fig. 7).

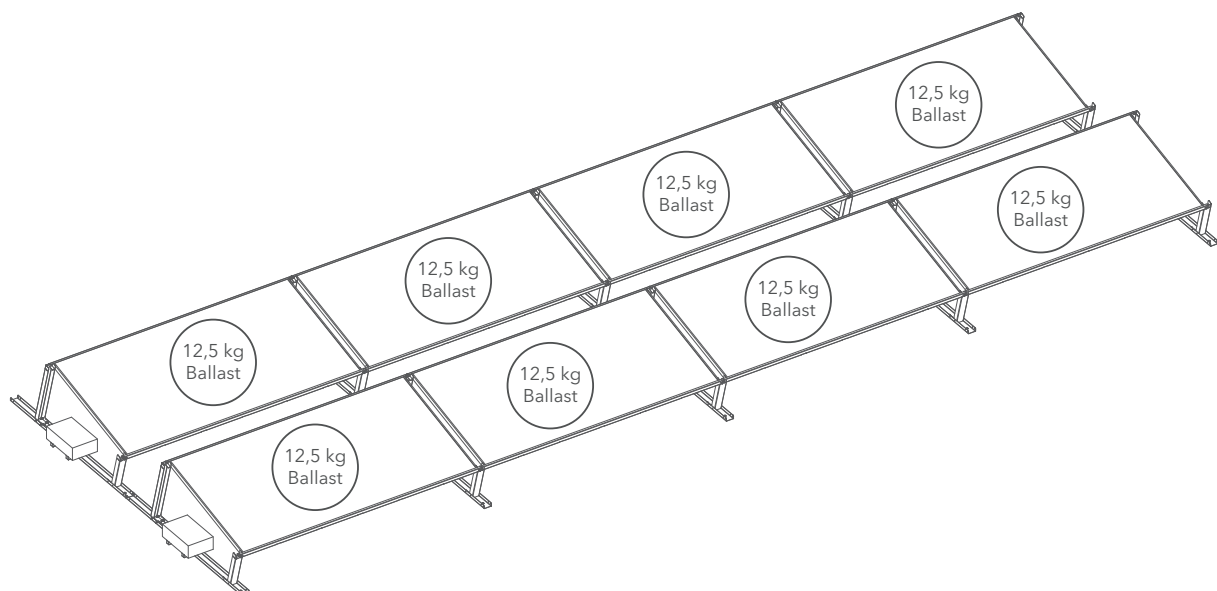


Fig. 7. distribution of the ballast for two rows of photovoltaic modules

Ballast distribution in wind zone II

- 8 For a series of photovoltaic panels, this is 45 kg of ballast per panel (Fig. 8).

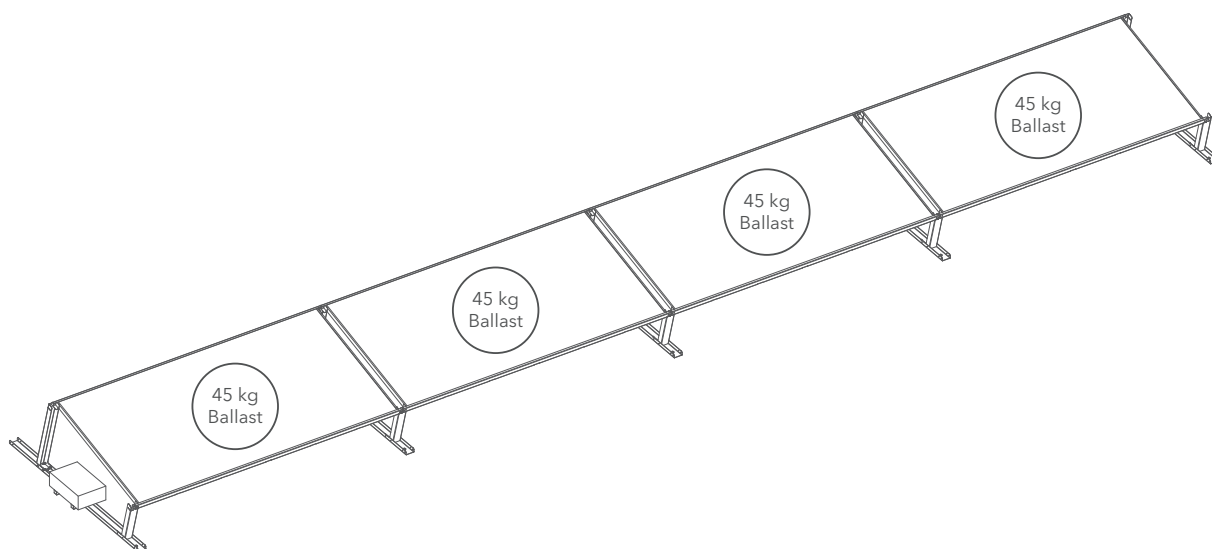


Fig. 8 Distribution of the ballast to the individual rows of photovoltaic modules

- 9 With two rows of photovoltaic panels, this is 35.5 kg of ballast per panel (Fig. 9).

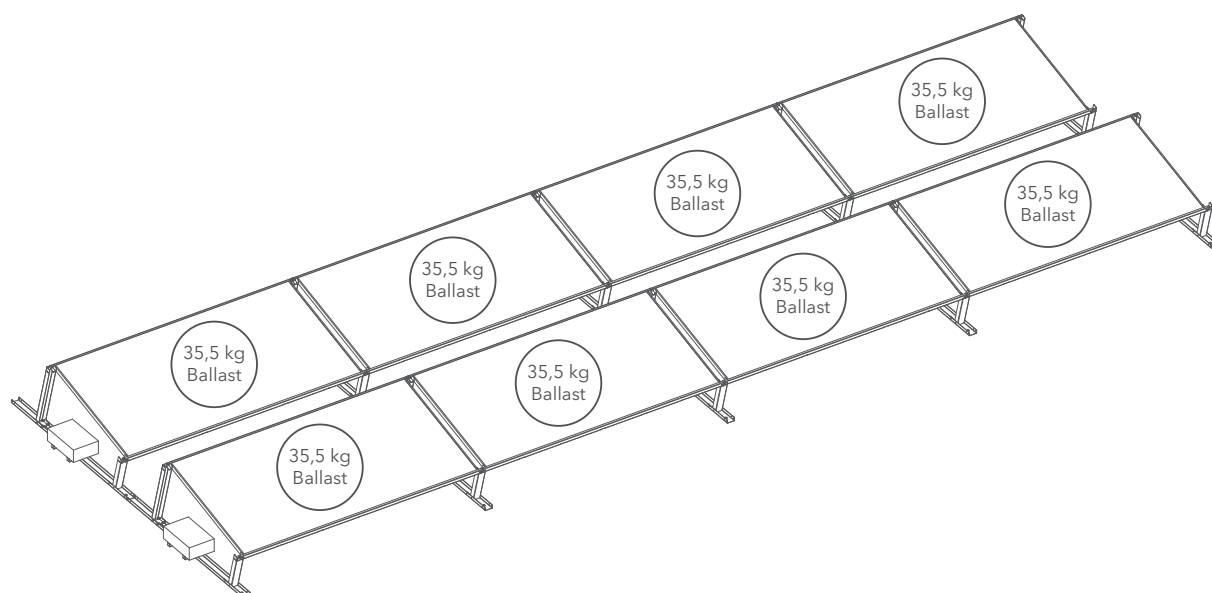
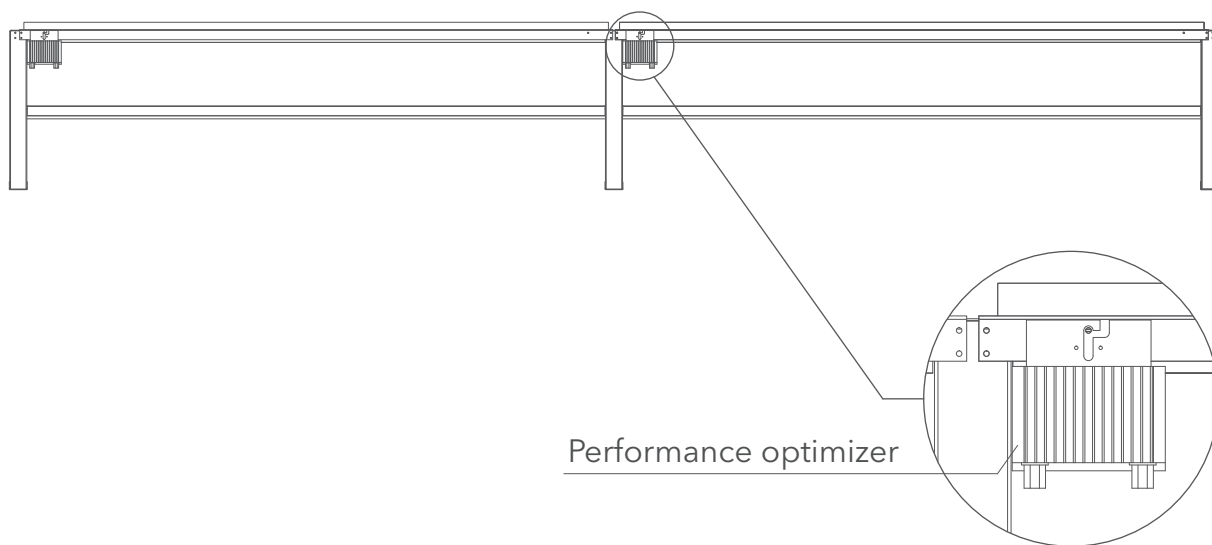


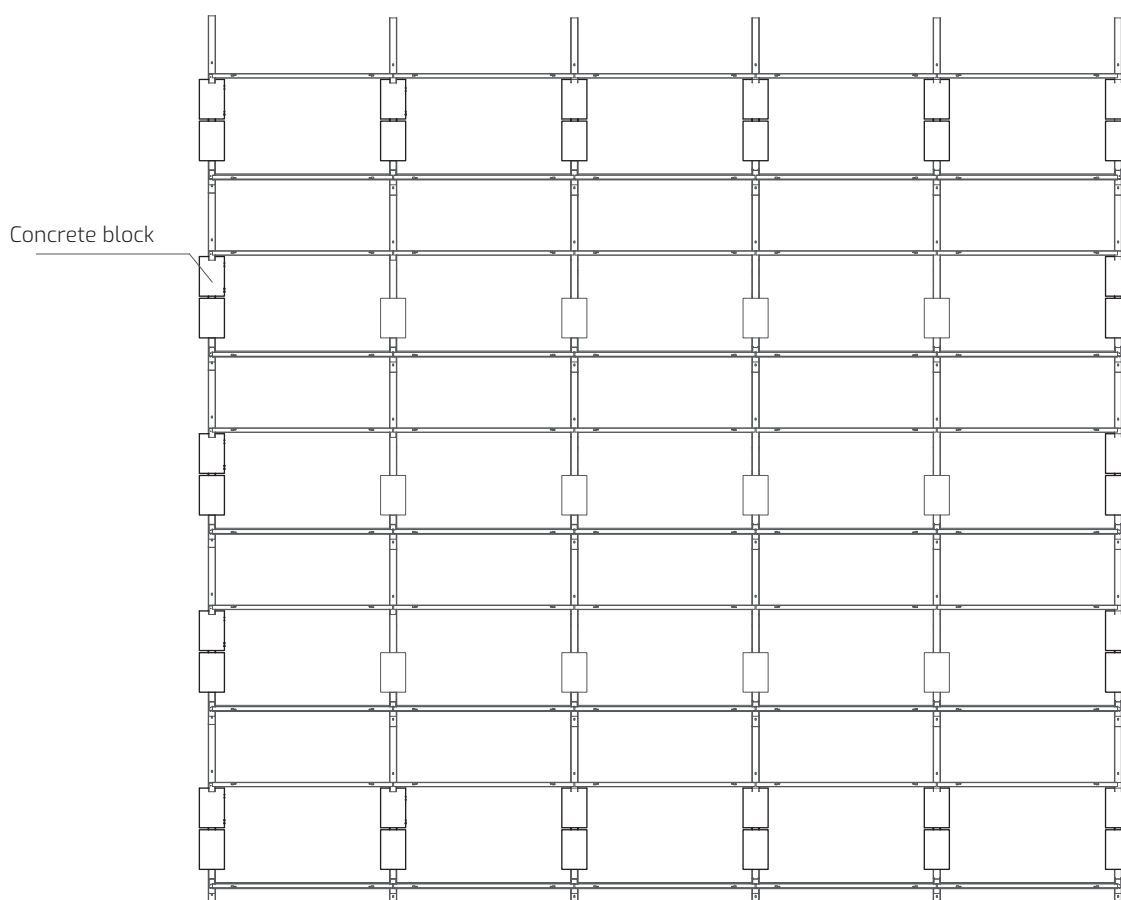
Figure 9: Distribution of the ballast for two rows of photovoltaic modules.

Installation of power optimizers

- 10** The power optimizer is attached to the module holder on the back of the structure.



- 11** We recommend placing more concrete blocks on the outside of the structure.



Legal clause

This manual sets out the basic standards for the installation and operation of a support system for photovoltaic modules. The instructions do not represent and do not replace a photovoltaic installation project. The correct selection of the mounting system for photovoltaic modules and the components that belong to it is the responsibility of the persons who directly perform the installation of this system. This work should be performed by professional installers with the appropriate qualifications and experience. It is the installers' responsibility to select the correct mounting system and its integration with the building or the ground depending on the conditions of the location and the needs of the customer. IVENDO SOLAR, as a manufacturer of mounting systems, does not assume any responsibility for the proper execution and installation of the structure. It is necessary that the technical inspection of the installation is carried out at least once a year by persons with the appropriate qualifications. In case of occurrence of weather anomalies (strong gusts of wind over 79 km/h, unusual amounts of snow), a technical inspection of the installation should be carried out immediately after its completion. The construction shall be used in accordance with its purpose and environmental protection requirements. It is expected that the construction will be kept in perfect technical condition and that no significant deterioration of its operational characteristics and technical performance will be allowed. Changes and modifications of mounting systems manufactured by IVENDO SOLAR, including their cutting, welding, shortening, stretching, reducing the elements specified in the instructions, increasing the spacing of the supporting posts, increasing the load on the systems or using systems against their purpose, will result in an immediate loss of warranty rights and may shorten the life of the systems and limit their safe use.