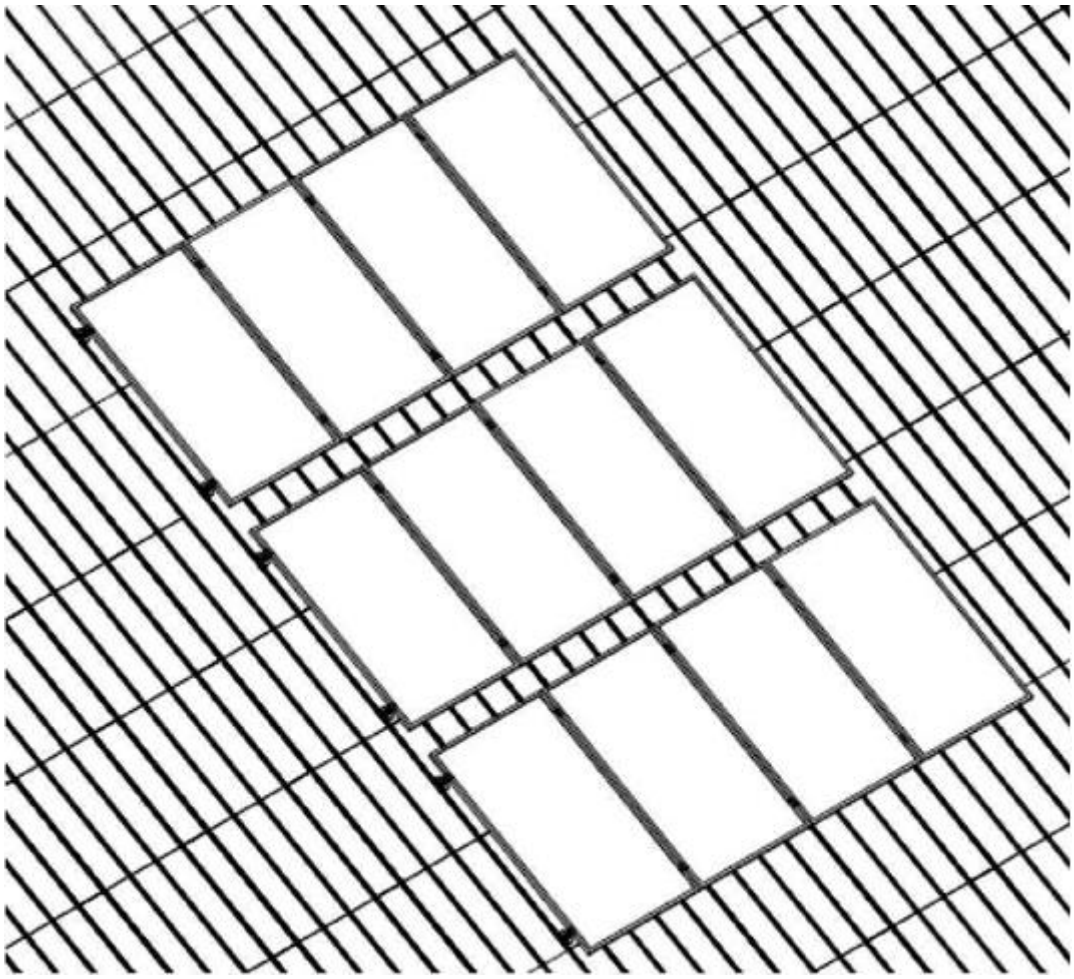
MOUNTING INSTRUCTION

FOR STRUCTURE

ON METAL-SEAM ROOFING



The mounting system described below is used to attach photovoltaic modules to pitched roofs with a minimum thickness of 0.4mm for steel sheathing or 0.5mm for aluminum sheathing. Thanks to the use of triangles, this system allows you to obtain the desired angle of inclination of the modules.

During production every effort was made to provide you with a product of the highest quality which is also easy to mount. This instruction is a set of rules for the correct mounting of the mounting structure components, but is not a blueprint or a substitute for it. The installer performing the mounting must be properly trained and licensed for the job. Total responsibility for proper installation rests with the installer who should select the appropriate type of construction.

In situations where the strength of the roof structure is questionable, a structural engineer should be consulted to perform strength calculations for the roof.

1. The layout of the modules shall be arranged to minimize or preclude the appearance of shadow on the modules. Keep in mind that even the shadow cast by trees or buildings can limit the yields generated by modules. When mounting the system in summer, be aware that the shadow cast by trees and neighboring buildings will reach much further in winter. Also remember to keep the safe zone on the roof sheathing - figure 1.

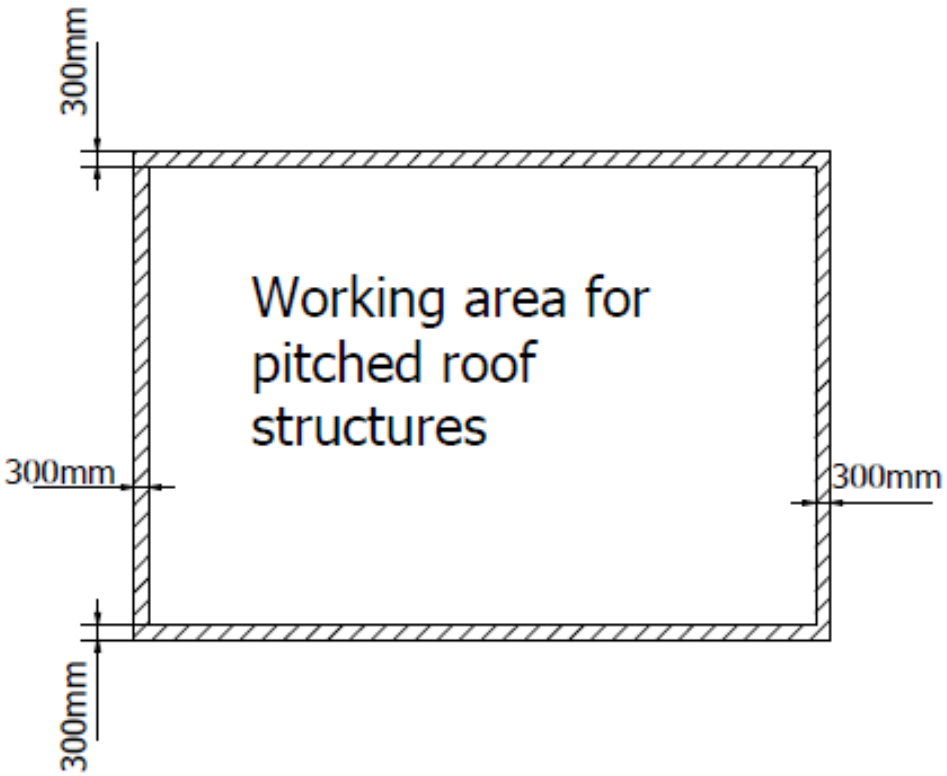


FIGURE 1 Clear zone for structures on the roof

2. The dimension of one row of modules can be calculated according to the module mounting method with the formula:

a. Formula for row mounted on short side:

ROW LENGTH = NUMBER OF MODULES IN THE ROW * MODULE LENGTH +20 mm) + 60 mm

ROW LENGTH = NUMBER OF MODULES * (MODULE LENGTH + 20) + 60

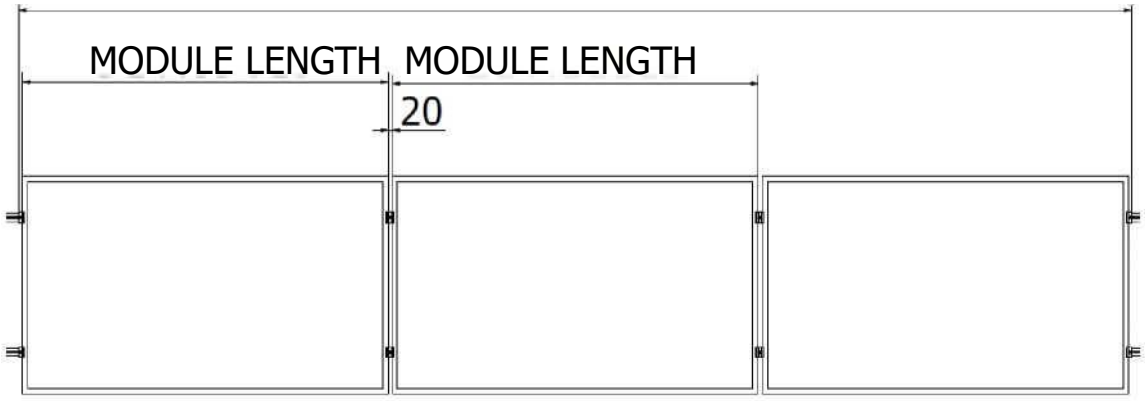


FIGURE 2 Length of row of short side mounted structures

b. Formula for a row mounted on the long side:

ROW LENGTH = NUMBER OF MODULES IN A ROW * (MODULE WIDTH + 20mm) + 60mm

ROW LENGTH = NUMBER OF MODULES (MODULE WIDTH + 20) + 60

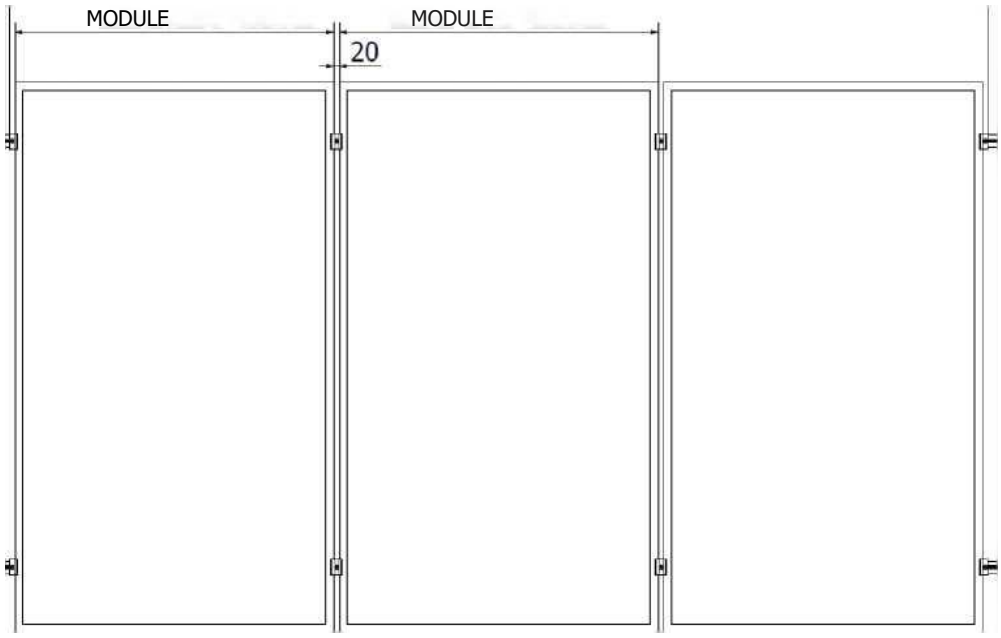


FIGURE 3 Length of the row of structures mounted on the long side

3. The spacing between each mounting point depends on the mounting profile selected and how the module is mounted to it. The dimensions listed are the maximum dimensions in Table 1 and Table 2.

a. For long side mounting

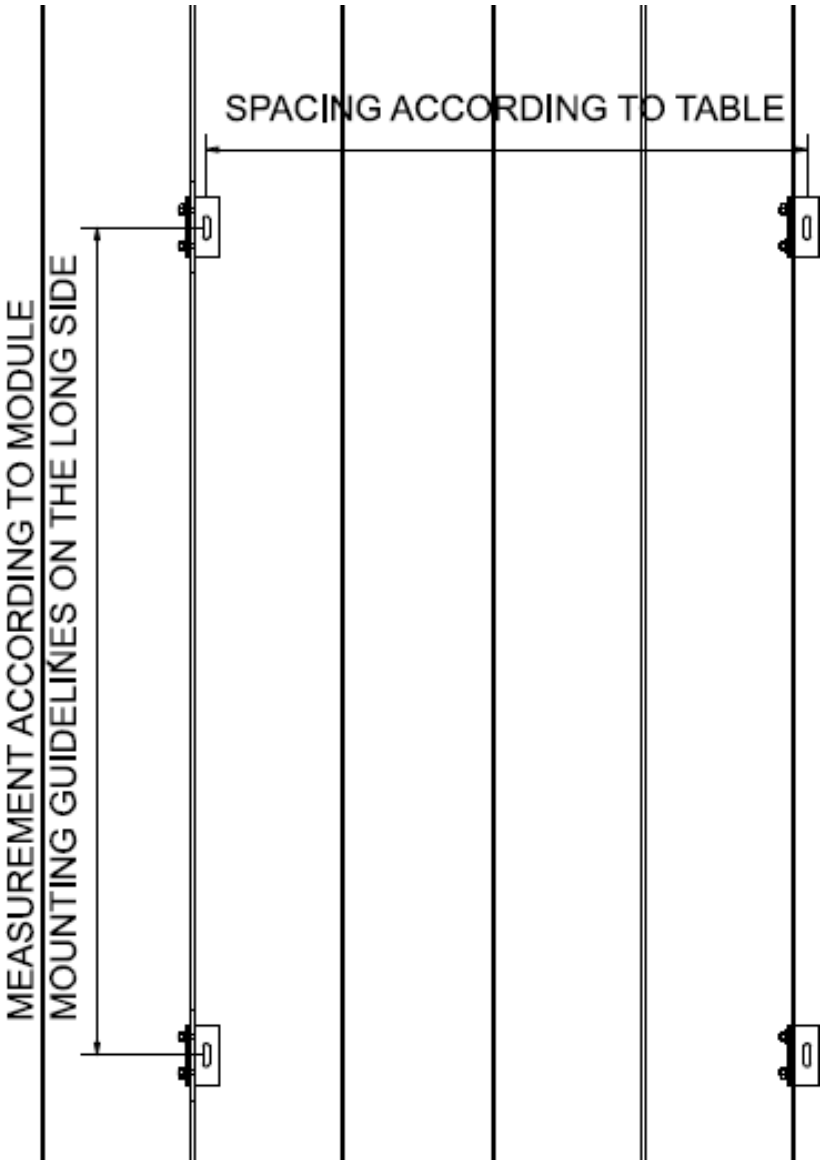


FIGURE 4 Bracket spacing

Tab.1 Maximum spacing of brackets

Module length	K-01	K-25
1780 mm	1.4 [m]	3.6 [m]
2275 mm	1.2 [m]	2.9 m

a. For short side mounting

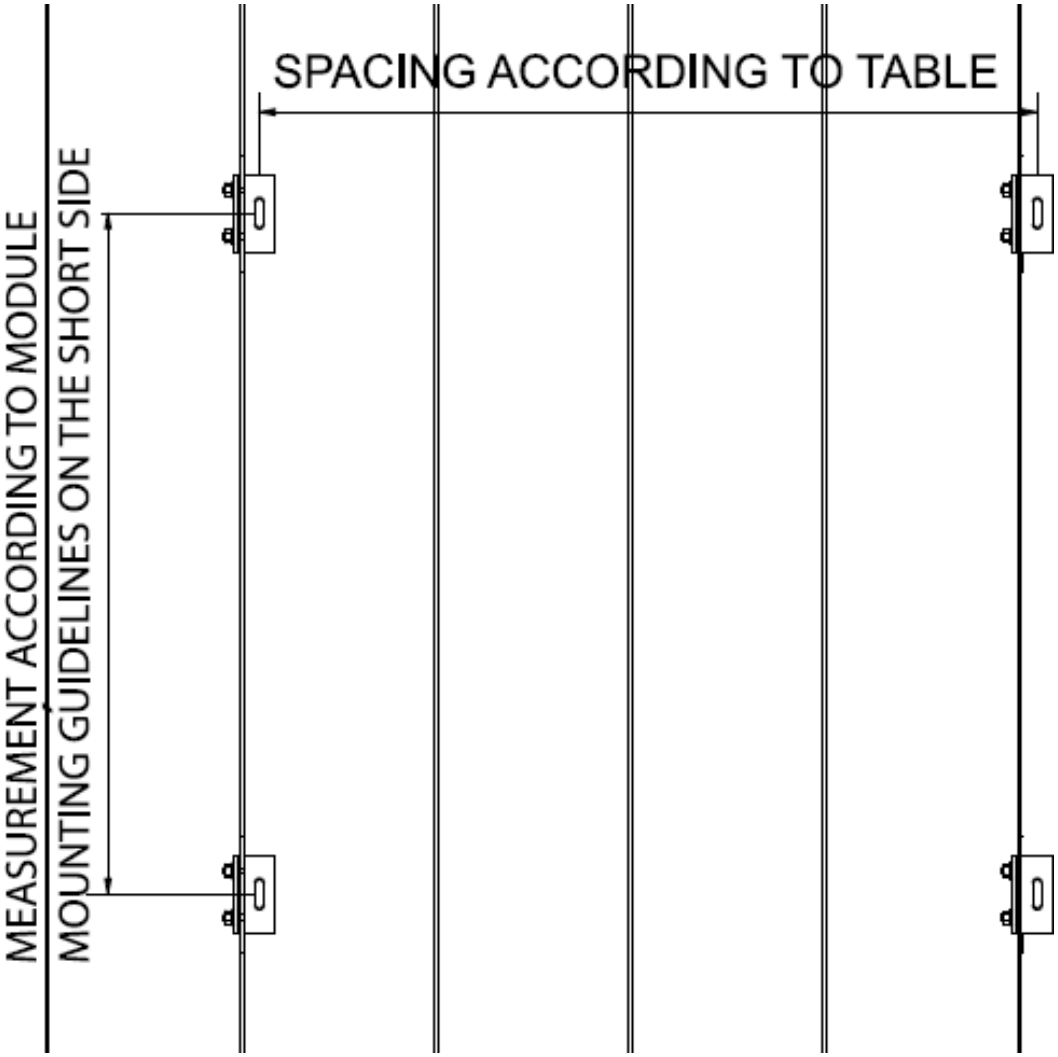


FIGURE 5 Bracket spacing

Table 2 Maximum spacing of brackets

Module length	K-01	K-25
1780 mm	1.6 [m]	3.6 [m]
2275 mm	1.4 [m]	2.9 m

a) Mounting methods for sheet metal seam brackets **(K-24-Z).**

Insert the seam between the two bracket pieces, which are connected together using the K-28-M8 bolts included in the kit. After sliding the holder onto the seam, bolt it with a torque of 30Nm.

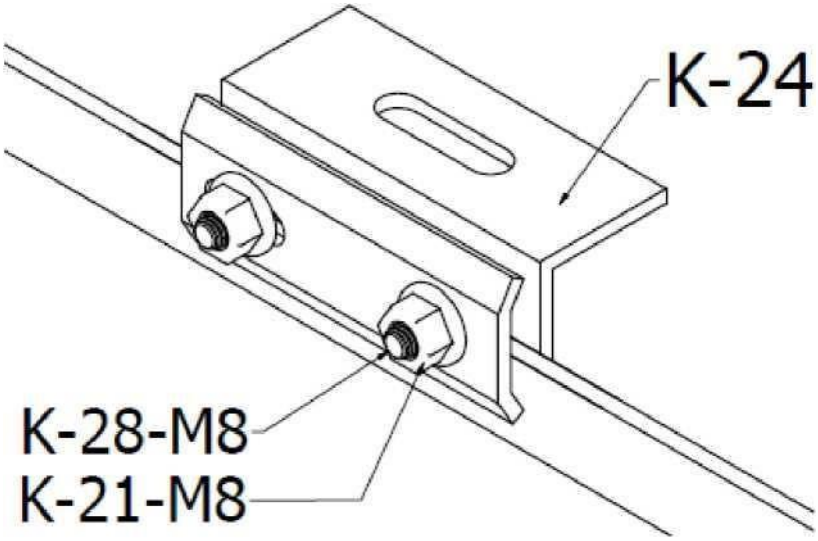


FIGURE 6 Mounting the bracket

b) Ways to install sheet metal seam brackets **(K-24-C).**

Insert the seam between the two bracket pieces which are connected together using the two M10 bolts included in the kit. After sliding on the seam, it should be bolted with a torque of 25Nm.

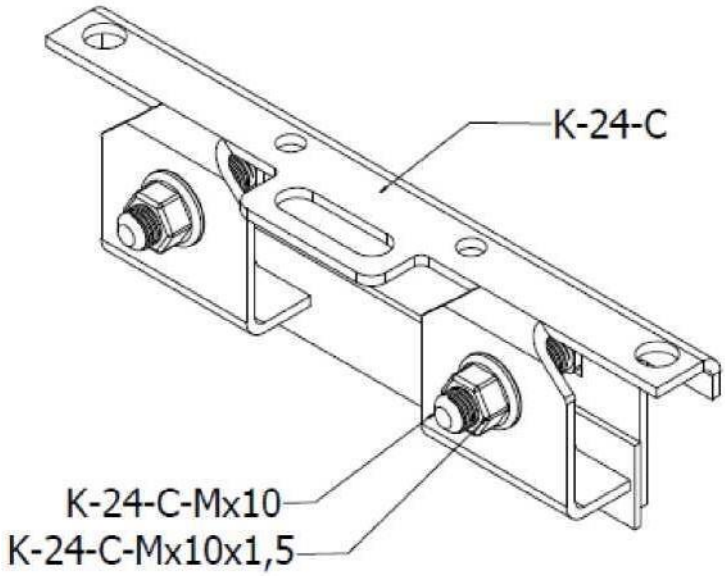


FIGURE 7 Mounting of the bracket

4. After mounting the brackets, prepare the mounting profiles by connecting them to the appropriate length using the K-02 connectors placed on the ends of two adjacent profiles. Profiles can be cut to the required length **- NOTE The minimum usable length of a profile in a construction is 500mm.**

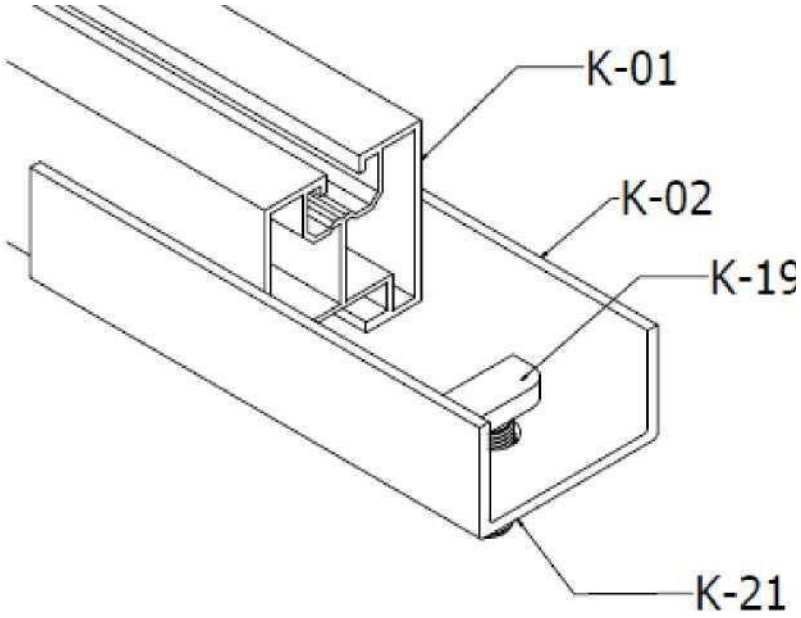


FIGURE 8 Mounting of the K-02 connector with the K-01 profile

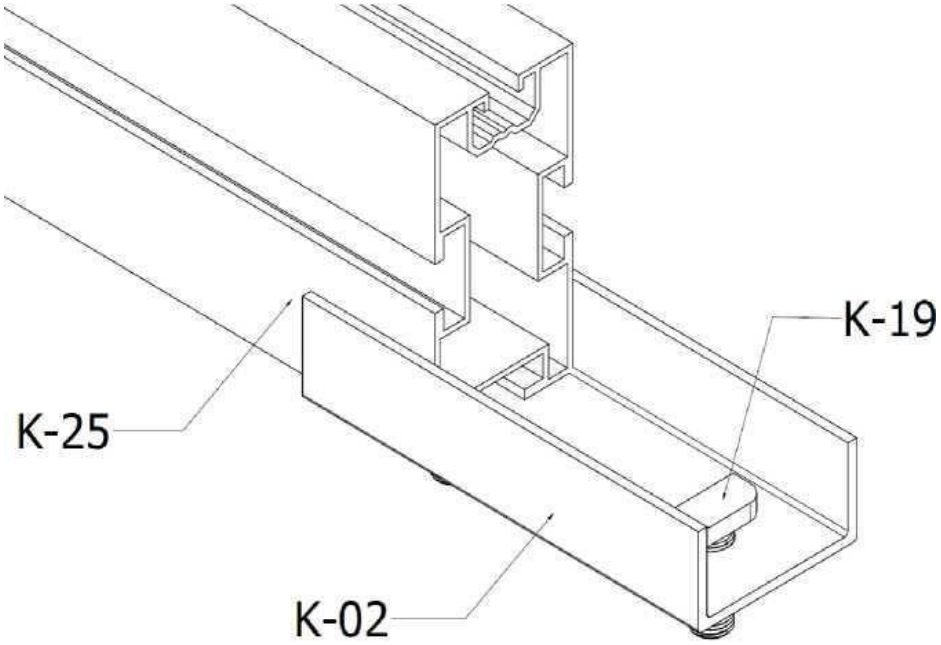


FIGURE 9 Mounting of the K-02 connector with the K-25 profile

5. a) The prepared profiles should be attached to the mounted brackets using "T" bolts. The heads of the bolts must go into a specially designed channel through the ”bean” holes.

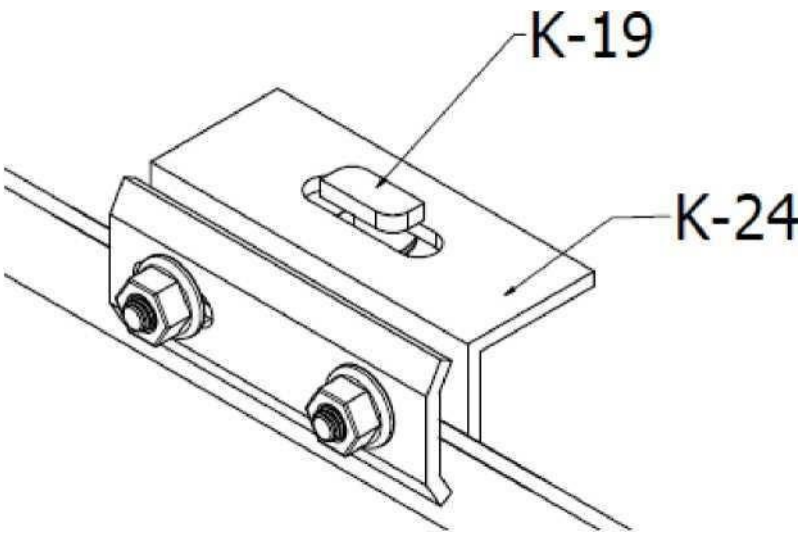


FIGURE 10 Mounting of "T" bolts

b)

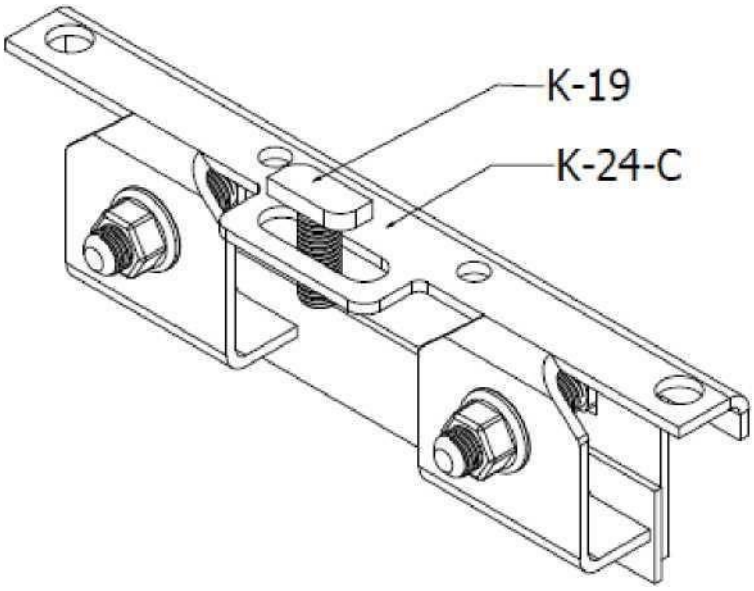


FIGURE 11 Mounting of "T" bolts

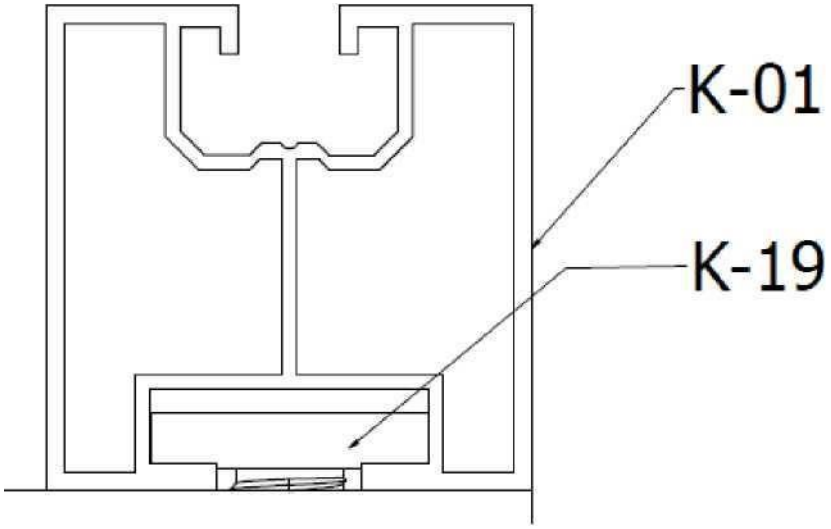


FIGURE 12 Mounting of K-01 profiles

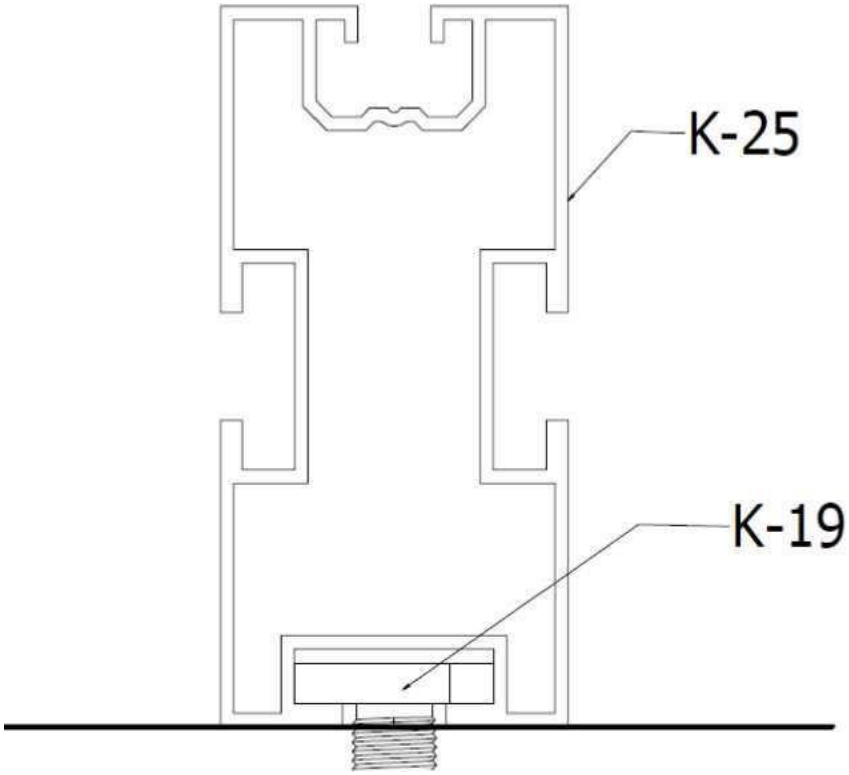


FIGURE 13 Mounting of K-25 profiles

a) Thread the K-21 nuts onto the protruding threads from the K-19 bolts.

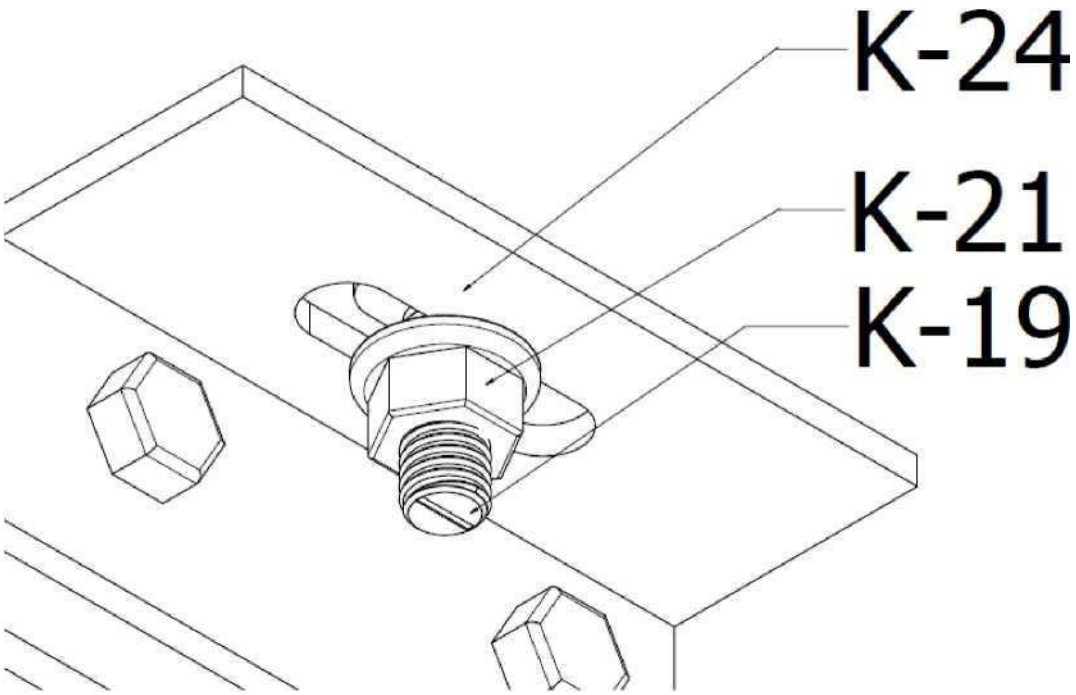


FIGURE 14 Mounting of "T" bolts

b) Thread the K-21 nuts onto the protruding threads from the K-19 bolts.

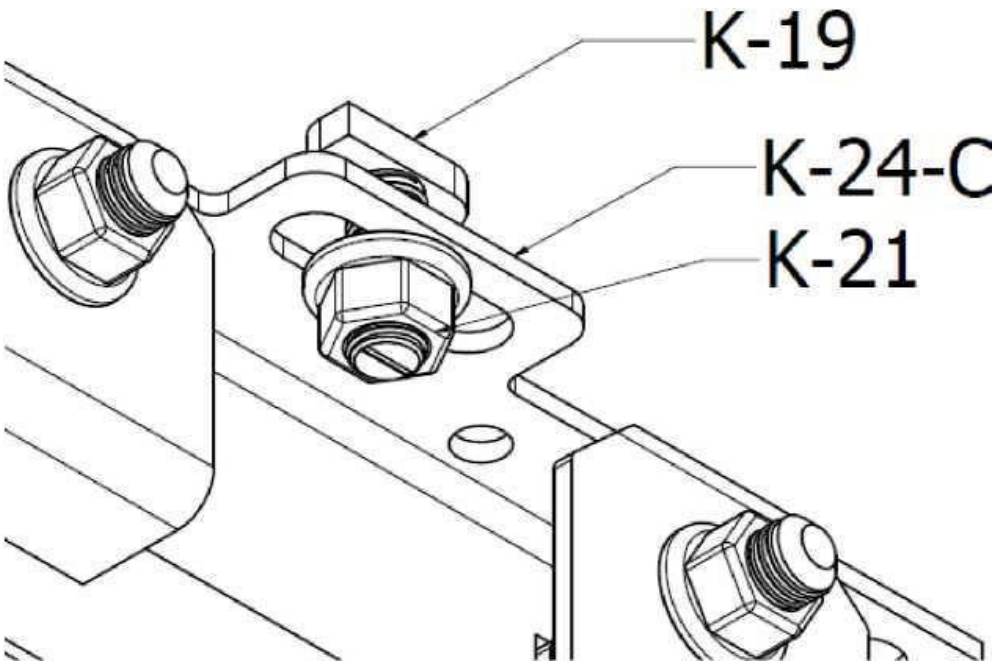


FIGURE 15 Mounting of "T" bolts

6. The prepared structure should be bolted together with a torque of 30Nm.

7. The K-04 t-slot nut can be mounted to the so prepared structure in a specially prepared channel. It can be mounted in any desired location.

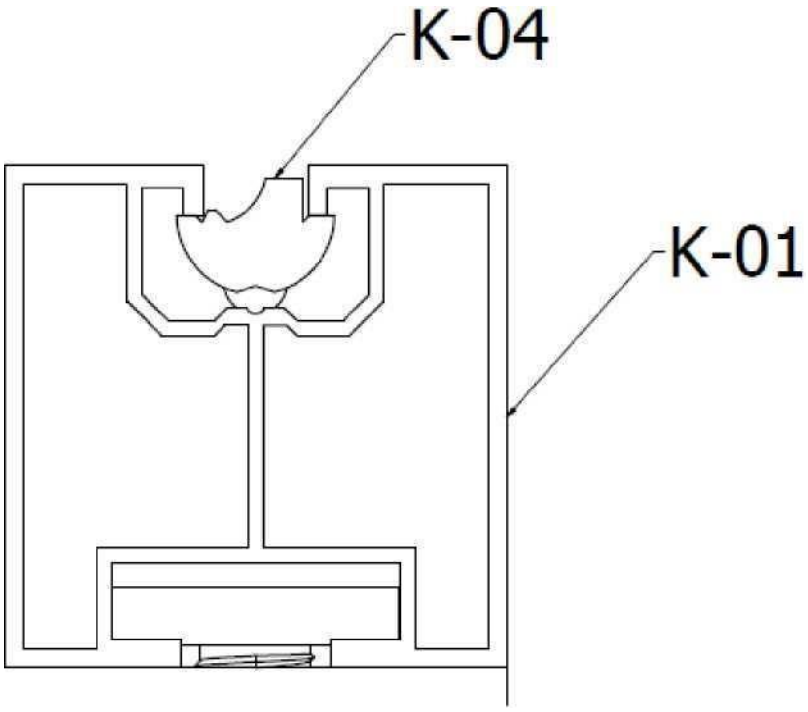


FIGURE 16 Mounting of the K-04 t-slot nut to K-01

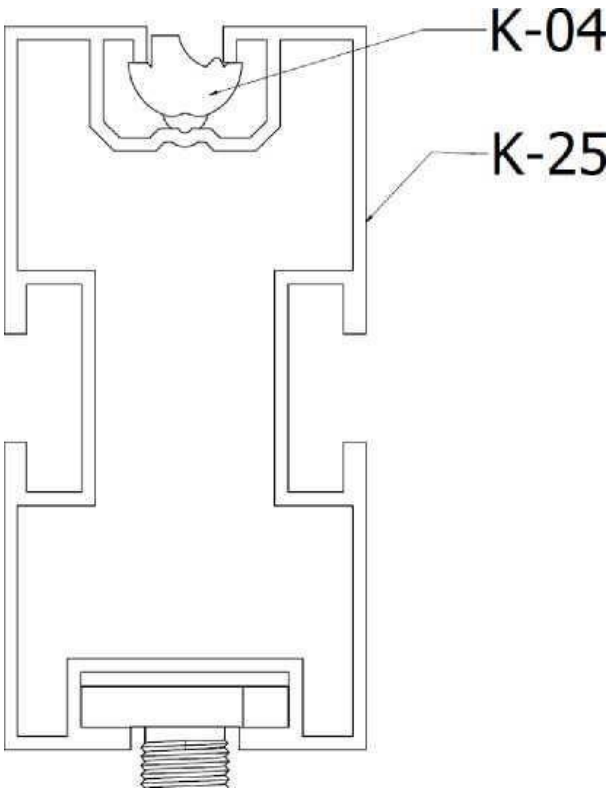


FIGURE 17 Mounting of the K-04 t-slot nut to K-25 profiles

8. Then insert the K-06 end clamps into the first profile with the K-18 allen screws. The first from the edge and the last from the edge will always be the end clamp, stabilizing the edge of the first and last module in a row. The mid clamps, on the other hand, will simultaneously stabilize the sides of the two modules. Properly selected edge clamps will have a height equal to the module thickness, the allen bolts will be 10mm shorter than the module thickness, and the mid clamps are universal and fit any module thickness.

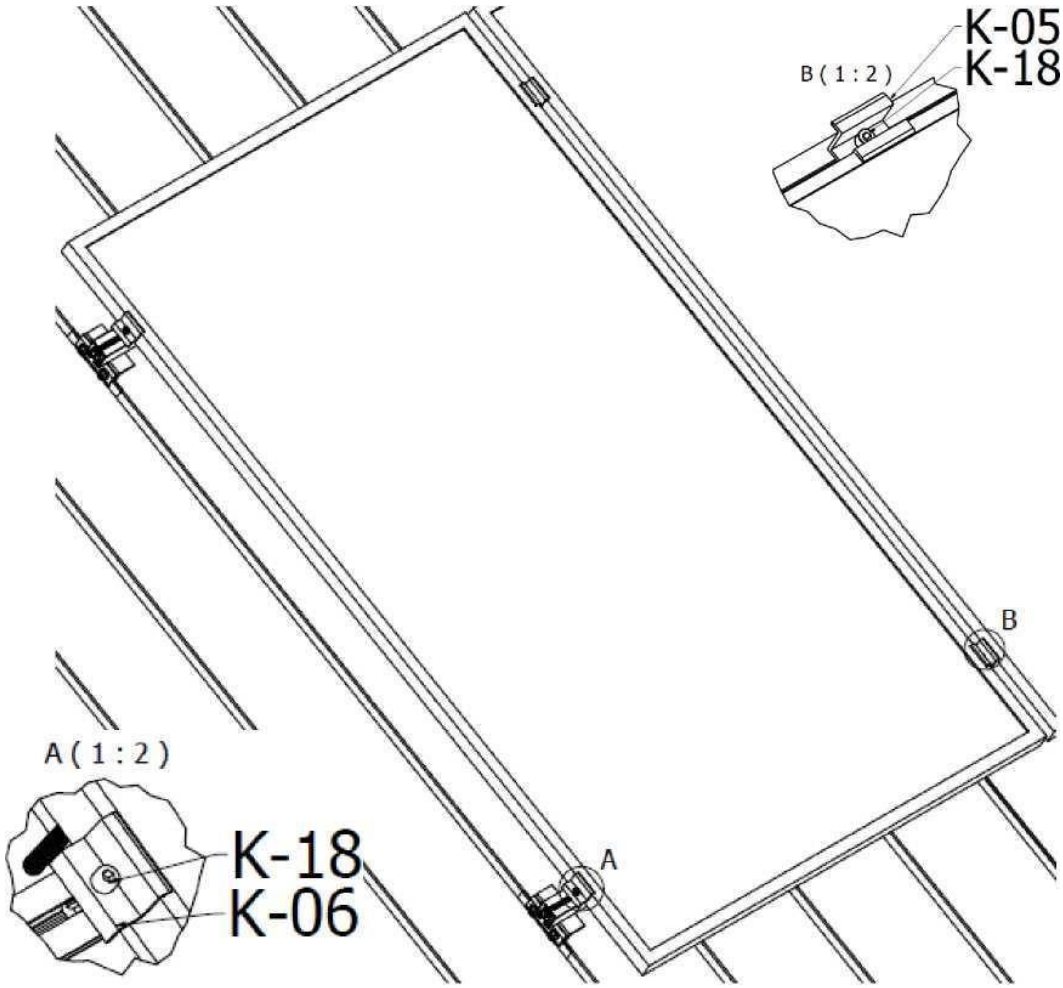


FIGURE 18 Mounting of the modules and mounting the K-05 and K-06 clamps

9. Clamps should be tightened with a torque of 18Nm

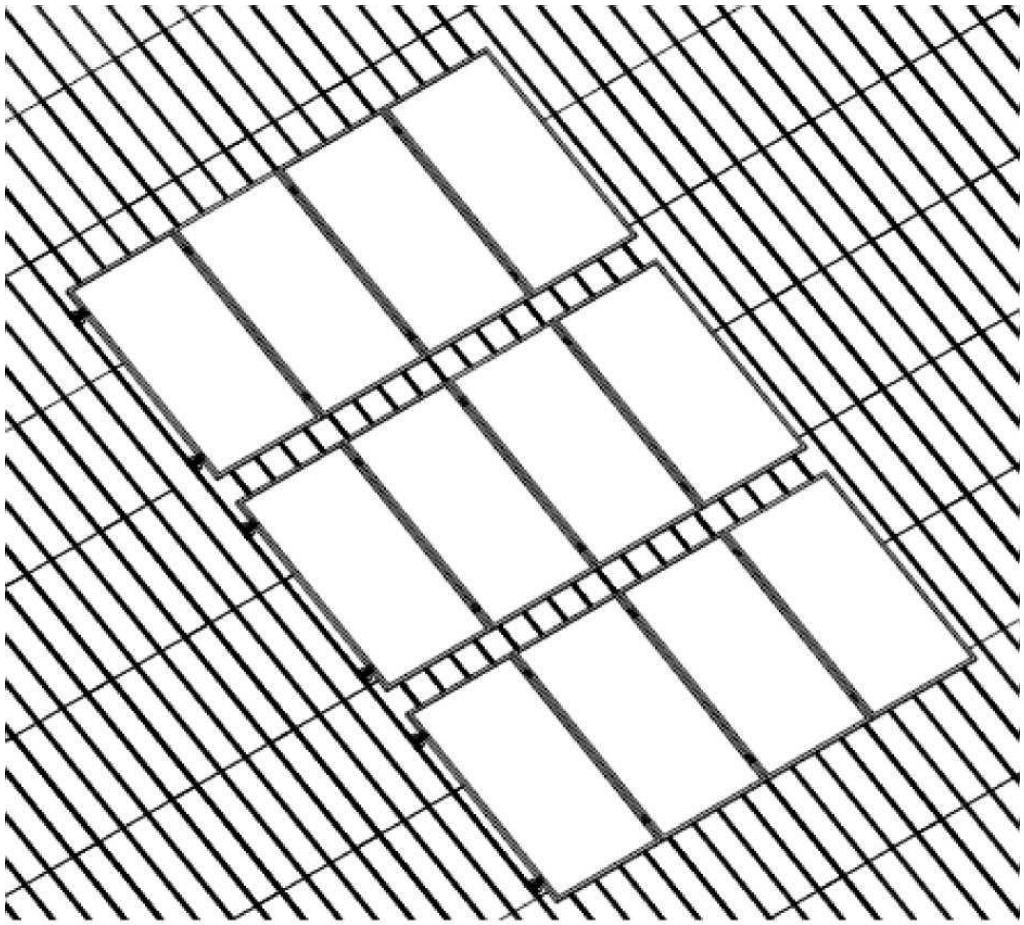


FIGURE 19 View of assembled structure with modules

Thank you for using construction KENO Sp. z o. o.

v.23.03.2023