

INSTALLATION GUIDE

TRIANGLE/MULTIANGLE





Energy Systems is a company with main office and headquarters located in Braga, within the north Portugal region. We are specialists in the development and production of photovoltaic mounting systems and carport structures, with standard or tailored solutions. Our main focus is to offer high quality and reliability products, that satisfy our customers needs. We have our own production and engineering departments, with experienced professionals and always acting according with the Eurocode rules and standards. We develop and produce components and mounting systems with guarantee of high performance. All our products are designed and developed to become the assembly easier and faster, reducing the time spent on installation.

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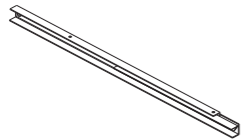
Triangle/Multiangle

The Triangle/Multiangle is produced under a rigorous process of engineering and quality, which ensure an excellent performance in the fixation of photovoltaic modules on different sites. The rail is made of extruded aluminium (EN AW-6060) with thermal treatments (EN 573-3 and EN 755-2) and it has 15 years of manufacturing warranty. All the accessories are made of Stainless Steel A2, following the DIN ISO 4759/1 and DIN 267/2 rules.

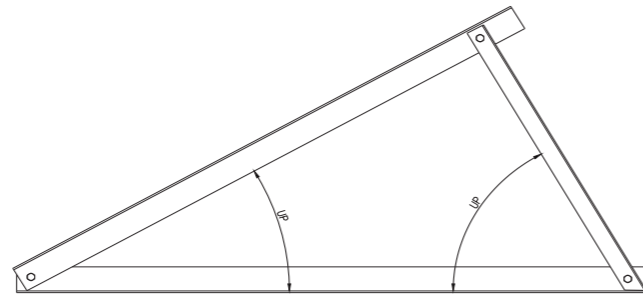
It is a tailored solution suitable for all types of roofs and designed to inclination angles between 1° and 45° and the possibility to be extended in two or three lines of photovoltaic modules, in Portrait or Landscape orientation. All the structural calculations are made in compliance with the Eurocode. It is delivered premounted to ensure a very easy and fast the installation, with no need to drill or cut between the components which holds the structure.

List of components

1



Corner Profile



2



Hexagonal Bolt M10x20

3



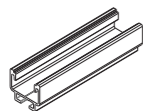
Hexagonal Nut M10

4



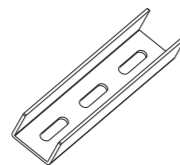
T Bolt M10x20

5



Easy Roof Rail

6



Rail Connector

7



Nut with Plastic Clip

8



End Clamp

9



Middle Clamp

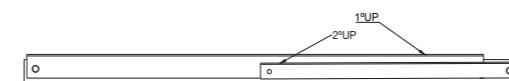
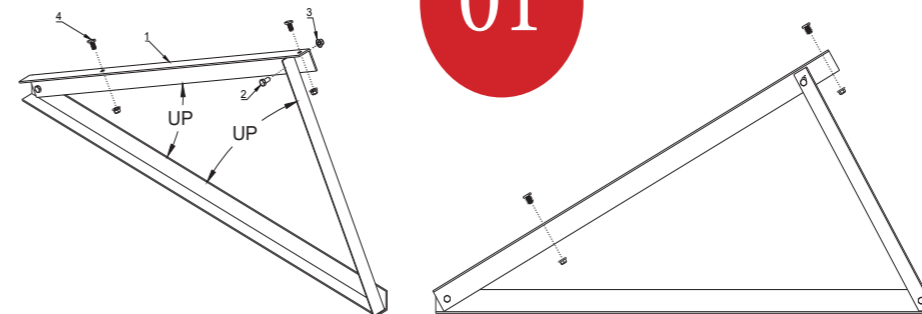
10



Allen Bolt

Installation steps

01



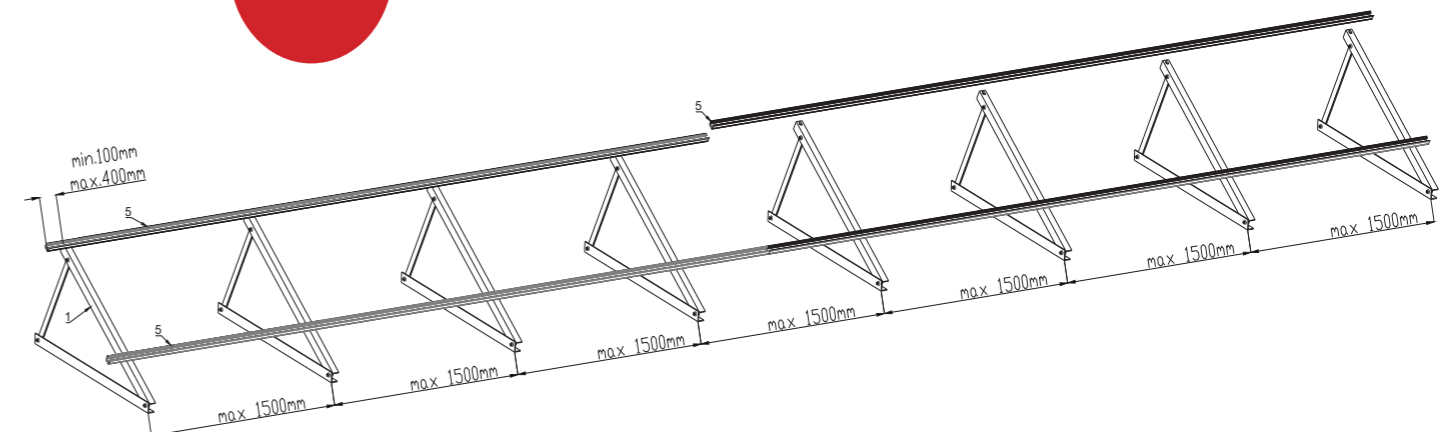
Triangle/Multiangle has a fixed tilt and it is pre-assembled.

A. Lift the back and the upper corner profile, connecting them with an Hexagonal Nut and an Hexagonal Bolt.

B. After mounting the triangle, insert a T Bolt and an Hexagonal Nut into the two holes of the upper corner profile.

***Tightening torque: 16 Nm.**

02

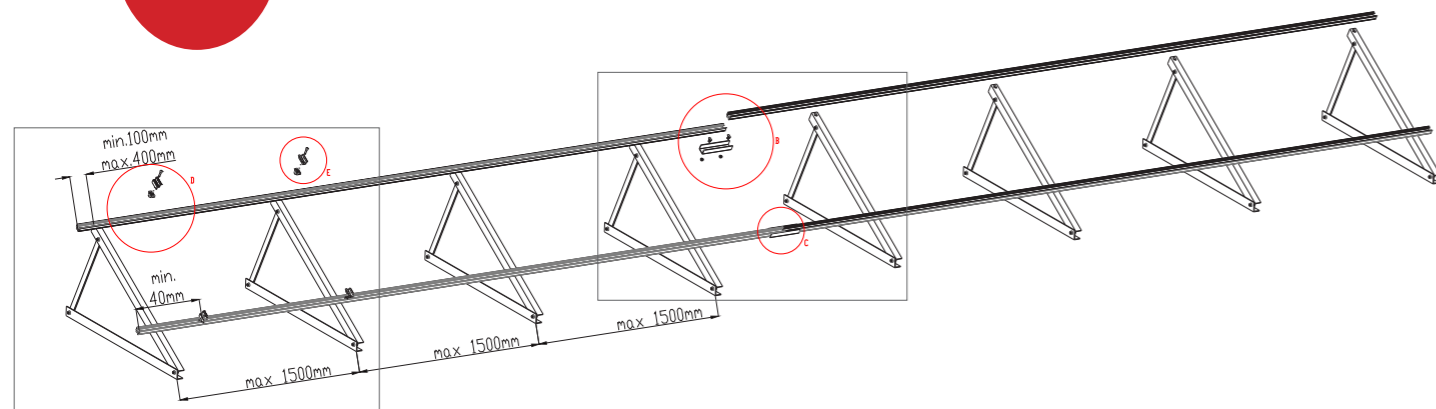


A. Define the distance between the triangles, according to the project requirements.
***Maximum distance according to the structural calculation: 1,5m.**

B. Set up the Easy Roof Rail, fitting the T Bolt previously inserted into the Upper Corner Profile on the lower slot of the Easy Roof.
***Keep a distance between 100mm and 400mm from the end of the Easy Roof Rail and the first triangle.**

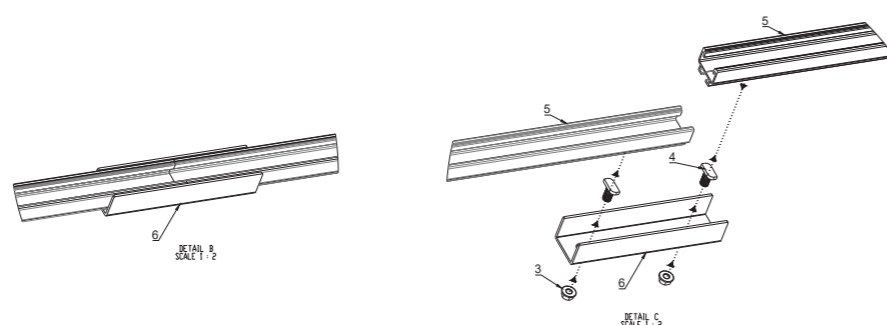
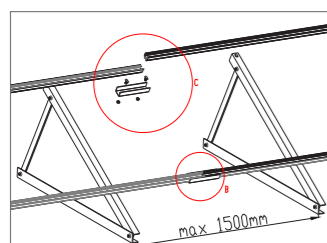
C. Tight the T Bolt using the Hexagonal Nut.
***Tightening torque: 14 Nm.**

03



A. Link the Easy Roof Rails with a Rail Connector, using T Bolts and Hexagonal Nuts.

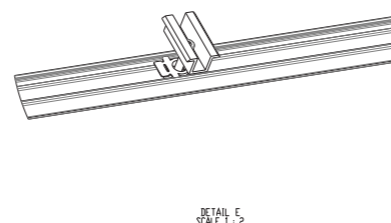
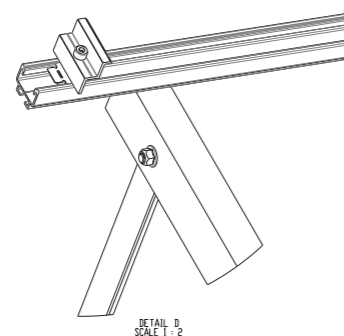
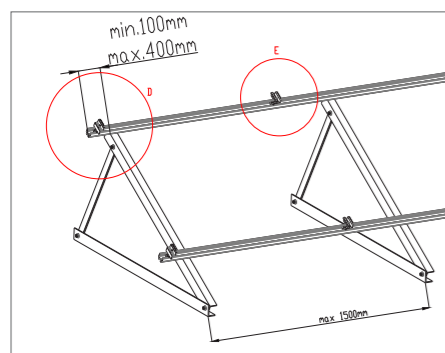
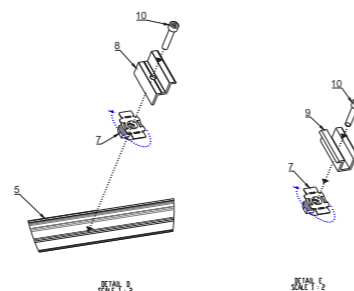
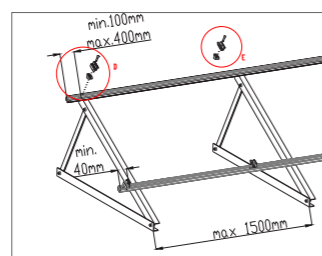
***Tightening torque: 14 Nm.**



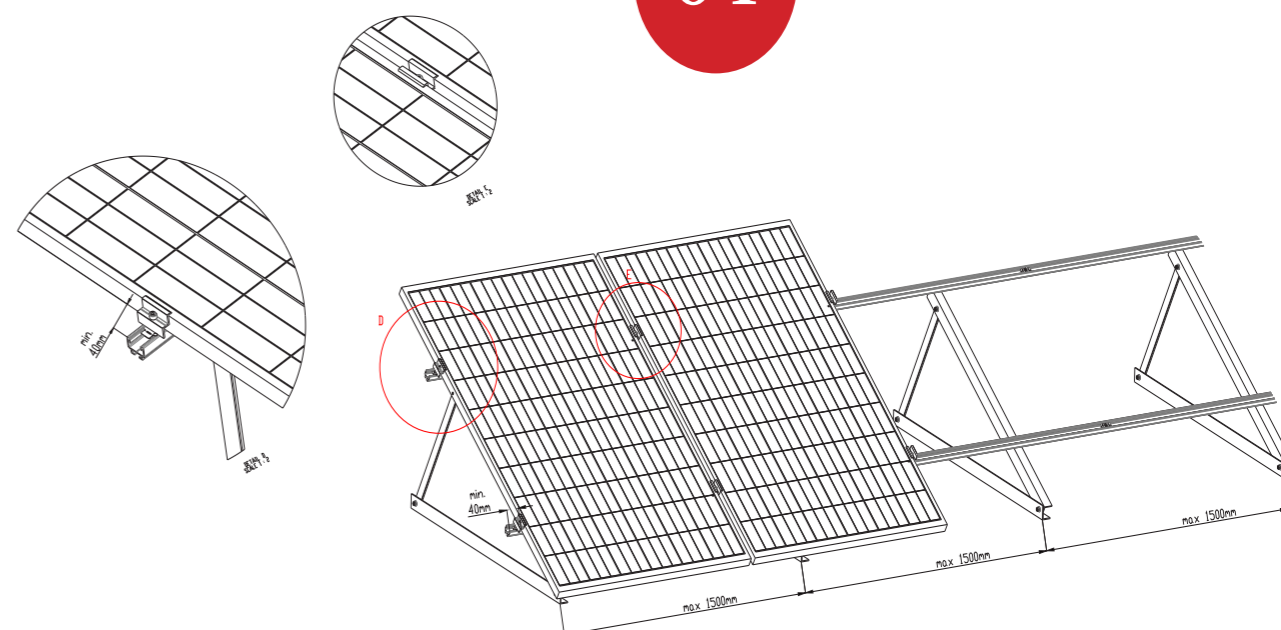
B. Fix the clamps, using an Allen Bolt and a Nut with Plastic clip (rotate 90° to insert on the Easy Roof Rail);

***Keep a minimum distance of 40mm from the end clamp and the end of the Easy Roof Rail.**

**** Tightening torque: 14 Nm.**

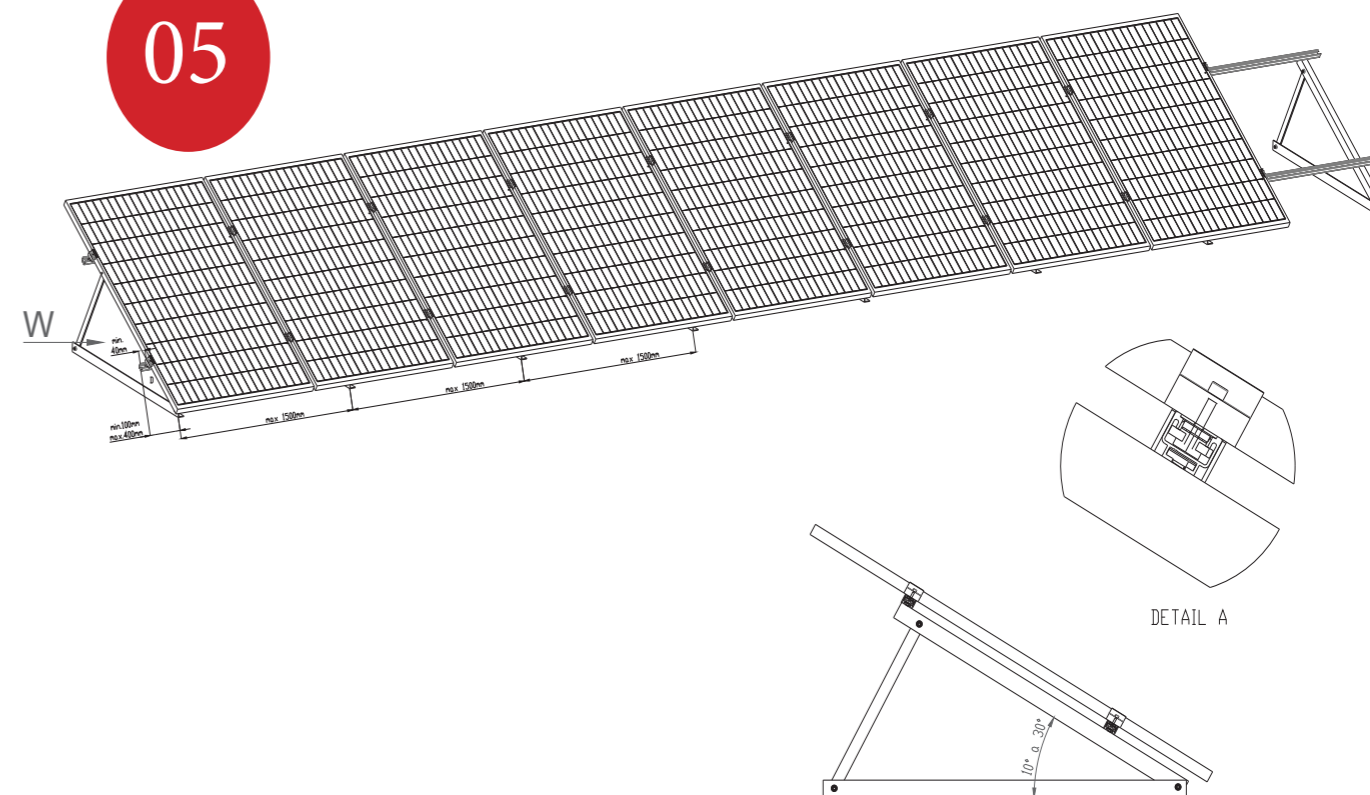


04



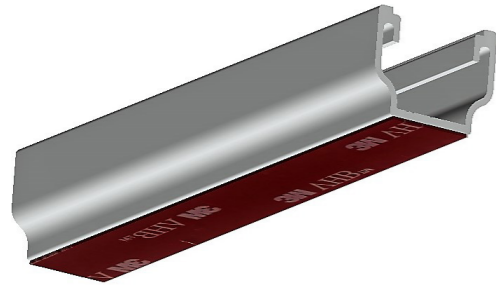
Fix the first module with a maximum distance of 400mm beyond the last triangle.

05

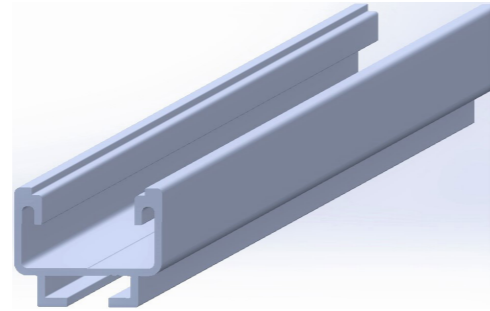


Repeat the process fixing all the modules using middle and end clamps and following the previous instructions.

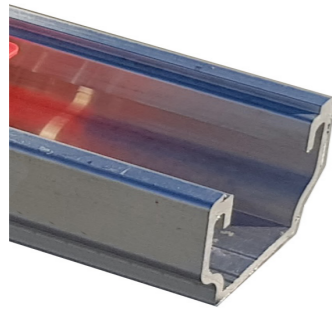
Other products



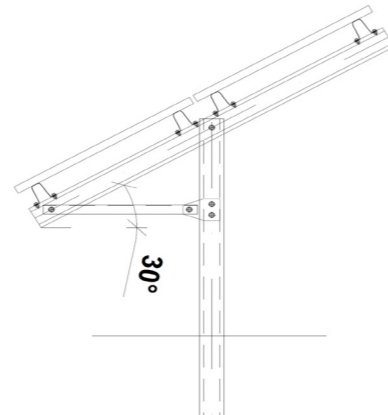
EASY PLAN 3M



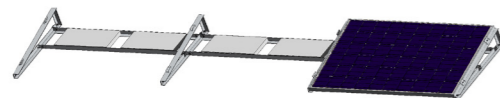
EASY ROOF



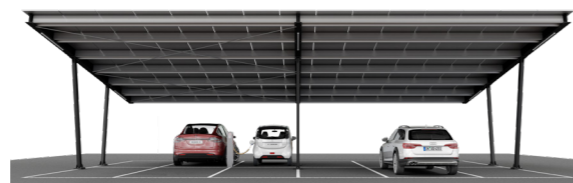
EASY PLAN LIGHT



GROUND MOUTING



BALLAST

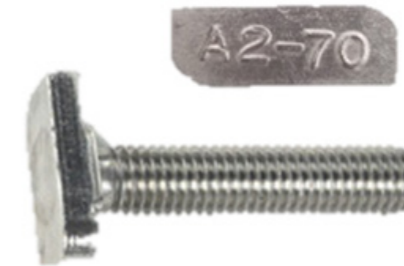


CARPORT

Our components



Allen Bolt Din 912 Inox A-2



T Bolt Inox A-2



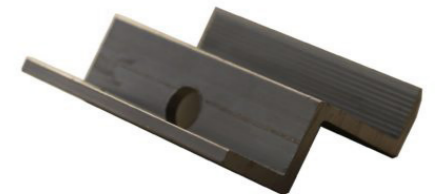
Flanged Nuts Inox A-2



Adjustable Hook Inox A-2



Fixing screw with double thread
+ Adapter plate Inox A-2



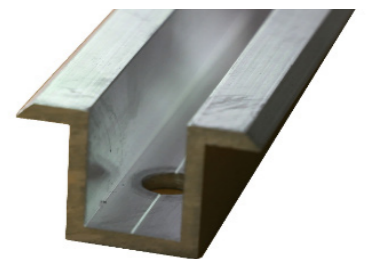
End Clamp Aluminium
35mm/40mm/45mm



Nuts with Plastic Clip
M8 Inox A-2



Ground Wire Clip (Electrical
Protection)



Middle Clamp Aluminium