DESIGN INSTRUCTIONS

How to design your solar field on ground with the Amfisol ground mounting structure.

1. General concept:

East-West design

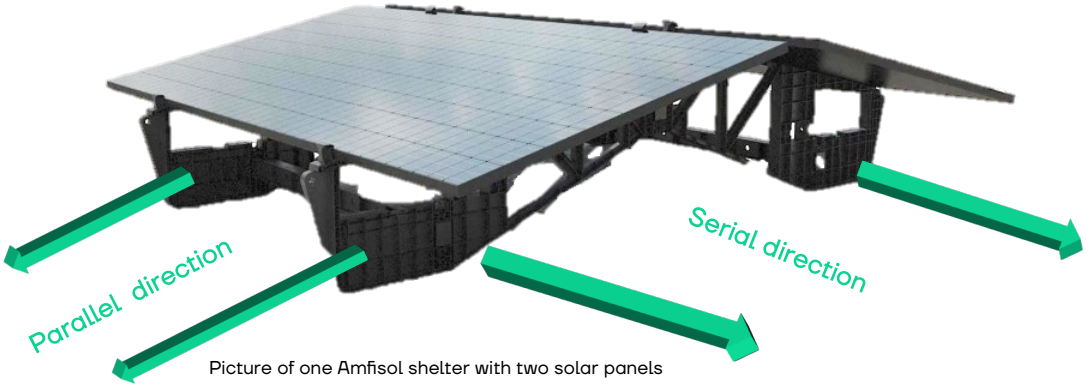
Solar modules under 13° tilt

Applicable solar panel:

The Amfisol system can only be used with framed modules with the following dimensions:

- Width: 1134 mm
- Length: from 2000 mm up to 2382 mm
  (for other lengths contact us)
- Frame height: 25 – 30 – 35 mm

One shelter consists of two solar panels in landscape orientation



Picture of one Amfisol shelter with two solar panels

In the serial direction the connections are made by the serial connection kit.

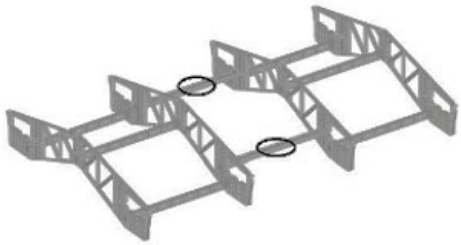
In the parallel direction you have two options:

1) With parallel connection – to have the maximum energy density
2) Without parallel connection – to have the easiest maintenance or O&M accessibility. The distance between the shelters in this parallel direction can be max. 30 cm.

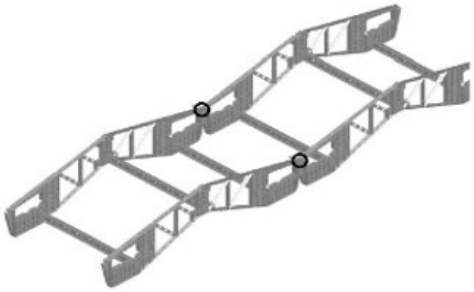
2. Interconnection of the shelters

One shelter (with two solar panels) can be connected to other shelters in two directions:

- Serial connection



- Parallel connection

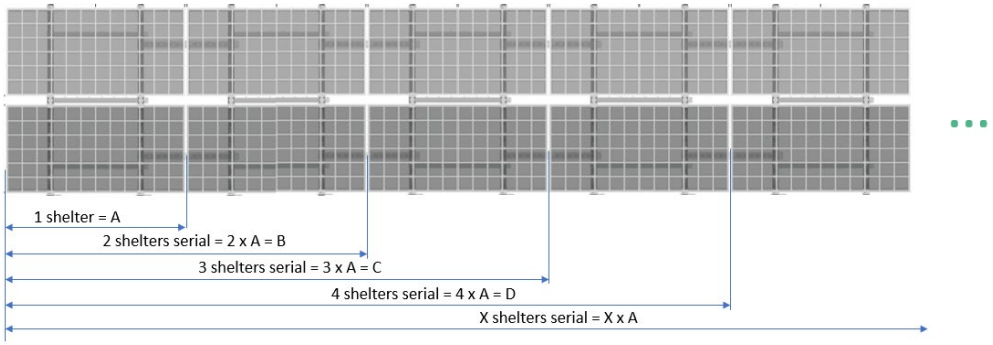


3. System dimensions

In order to end-up with the correct systems dimensions, it first needs to be defined if the parallel connection will be used or not.
When the parallel connection is used, the shelters will be positioned as close as possible next to each other in parallel direction and maximum energy density per square meter can be reached.
When the parallel connection is not used, a service path of maximum 30cm will be left in between each row on parallel direction.

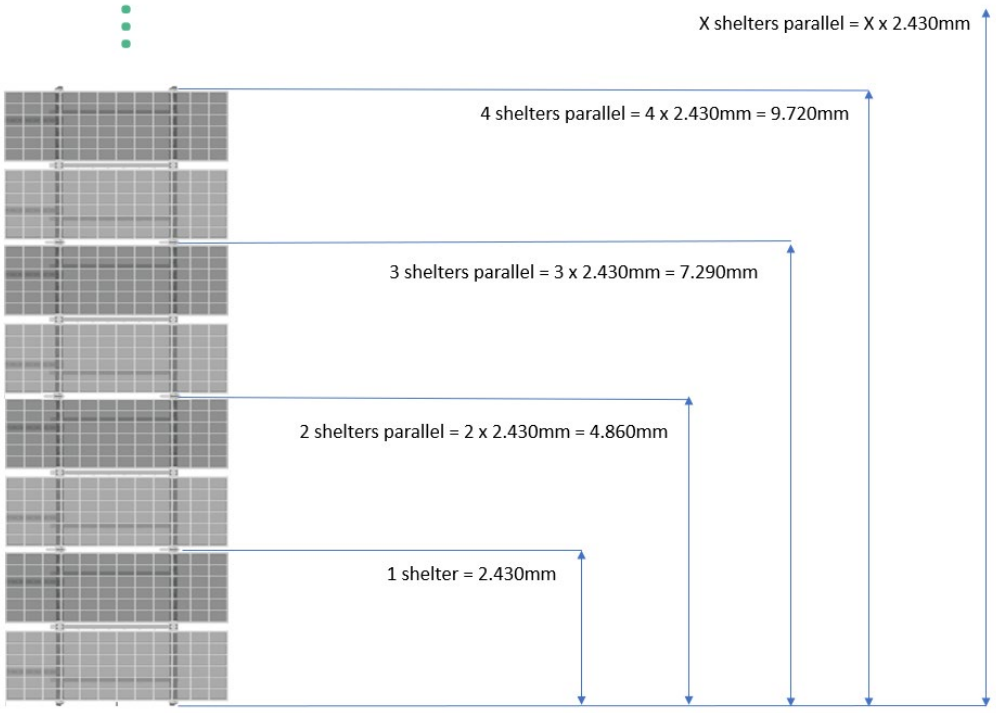
3.1 Parallel connection is used => Maximum Energy Density per square meter.

3.1.1 Serial direction: minimum 3 - maximum 30 shelters



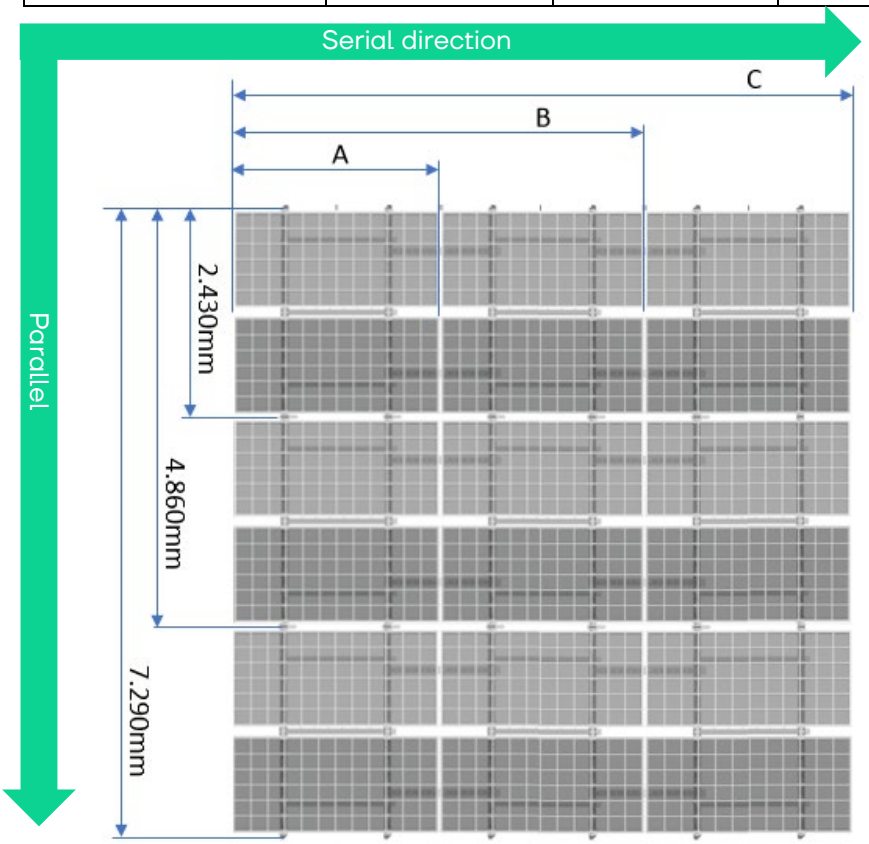
Panel length (mm)	A (mm)	B (mm)	C (mm)	D (mm)
From 2.000 till 2.278	2.308	4.616	6.924	9.232
From 2.279 till 2.382	2.412	4.824	7.236	9.648

3.1.2 Parallel direction: minimum 3 - no maximum



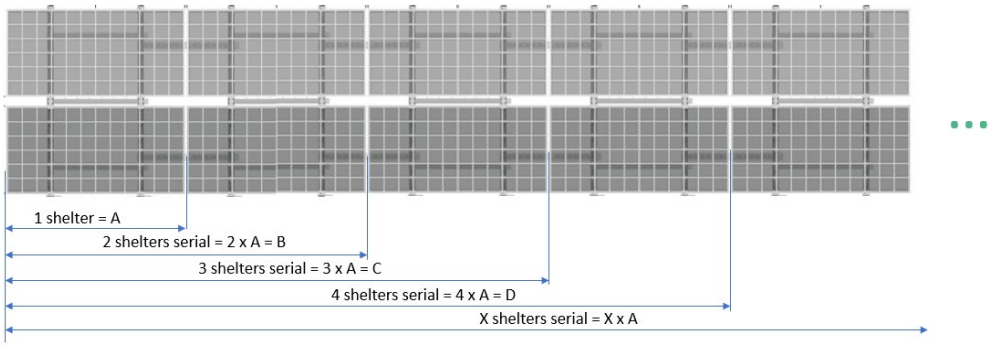
3.1.3 Example 3 x 3 shelters with parallel connection

Panel length (mm)	A (mm)	B (mm)	C (mm)
From 2.000 till 2.278	2.308	4.616	6.924
From 2.279 till 2.382	2.412	4.824	7.236



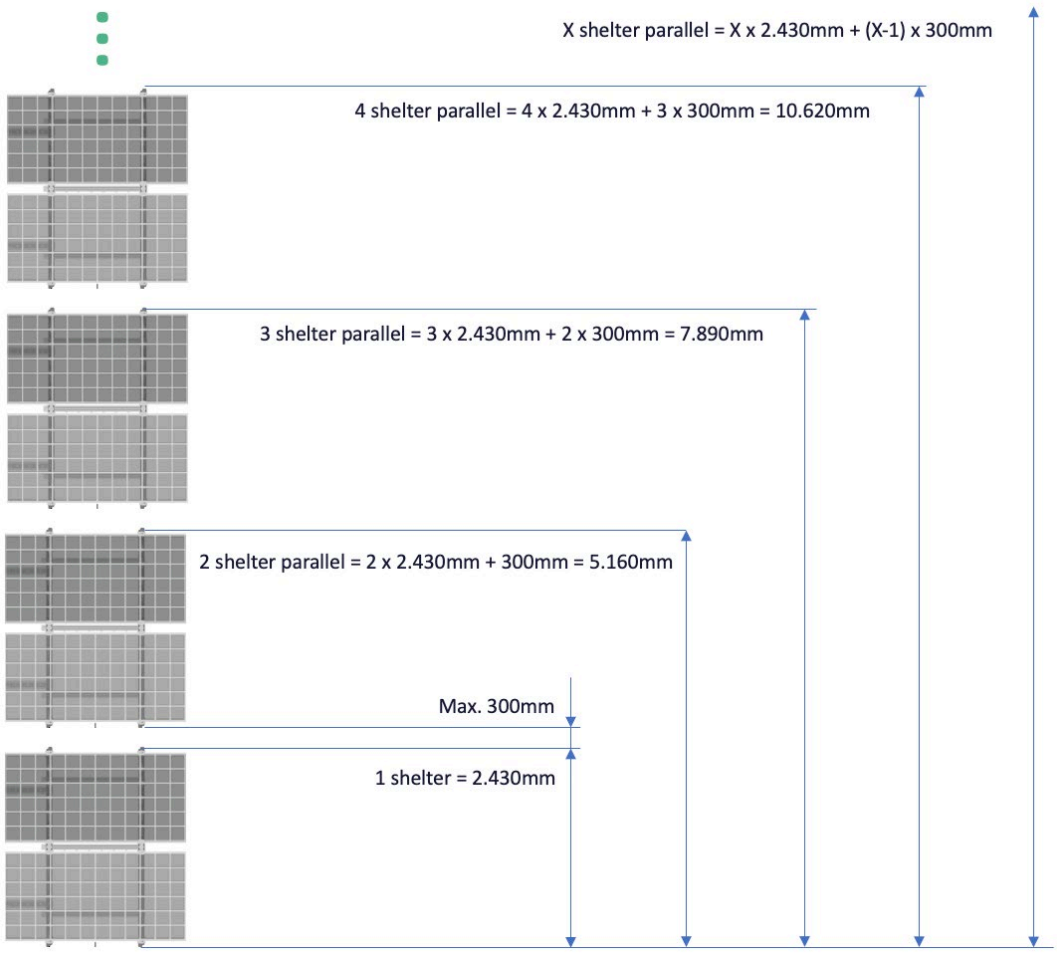
3.2 Parallel connection is not used => Maximum O&M accessibility.

3.2.1 Serial direction: minimum 3 - maximum 30 shelters



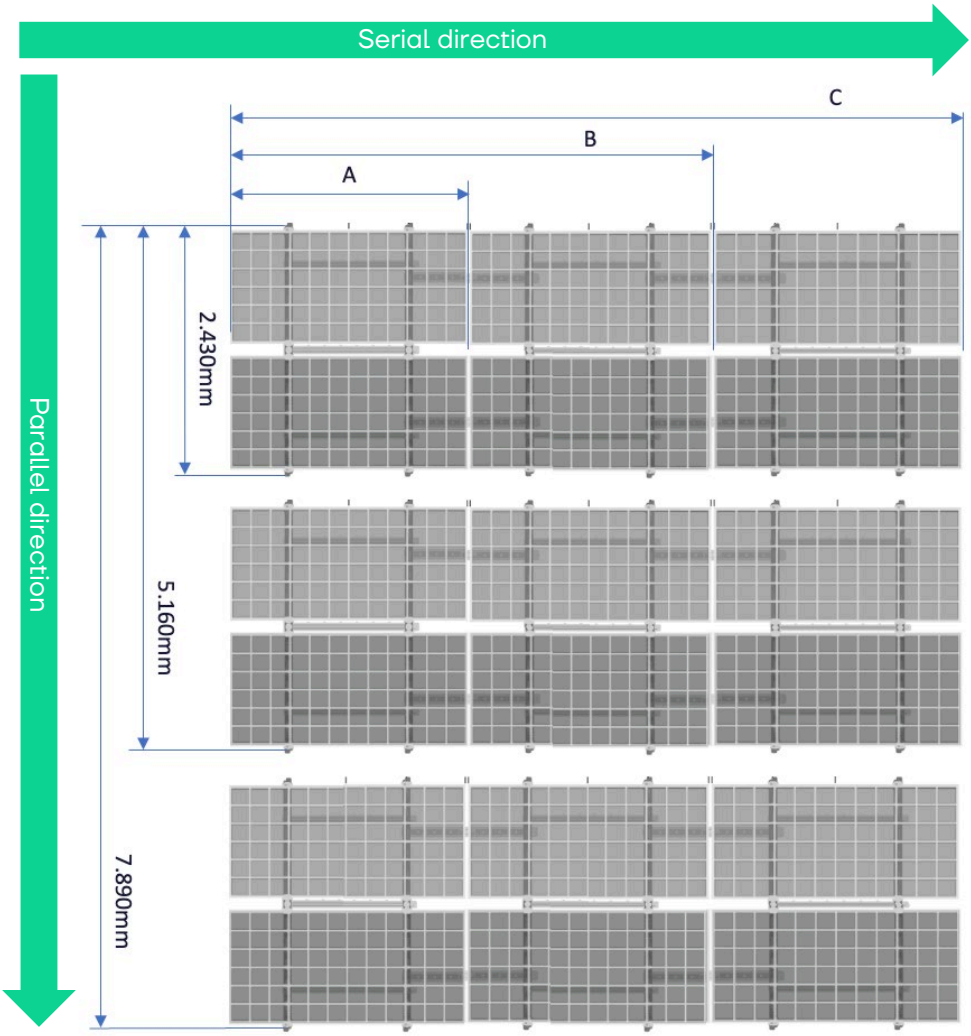
Panel length (mm)	A (mm)	B (mm)	C (mm)	D (mm)
From 2.000 till 2.278	2.308	4.616	6.924	9.232
From 2.279 till 2.382	2.412	4.824	7.236	9.648

3.2.2 Parallel direction: minimum 3 - no maximum



3.2.3 Example 3 x 3 shelters without parallel connection

Panel length (mm)	A (mm)	B (mm)	C (mm)
From 2.000 till 2.278	2.308	4.616	6.924
From 2.279 till 2.382	2.412	4.824	7.236



4. Subfields & service paths

4.1 Subfields

Take into account the minimum and maximum number connections of the shelters

- Serial connections: min. 3, max. 30
- Parallel connections: min. 3, no max.

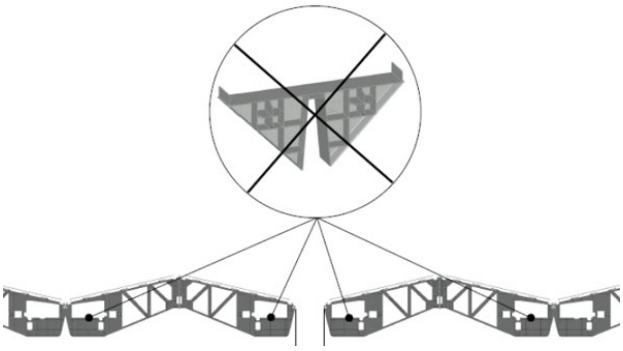
Any exceptions to these minimum and maximum specifications require prior written approval from AMFISOL BV.

4.2 Service paths

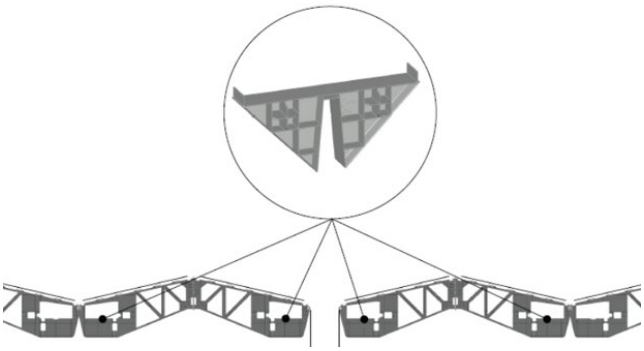
When the parallel connection is used as descripted in paragraph 3.1, service paths can be easily integrated within the subfields (or across the entire field).

The width of the service path determines whether additional ballast is required on the shelters forming the path:

- **Service path width ⩽ 60 cm:** no additional ballast required.
- **Service path width > 60 cm:** additional ballast is required on the outer shelters forming the service path.



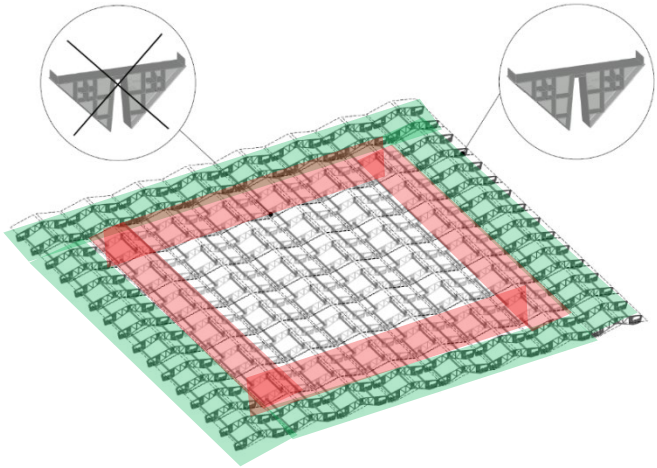
⩽ 60 cm



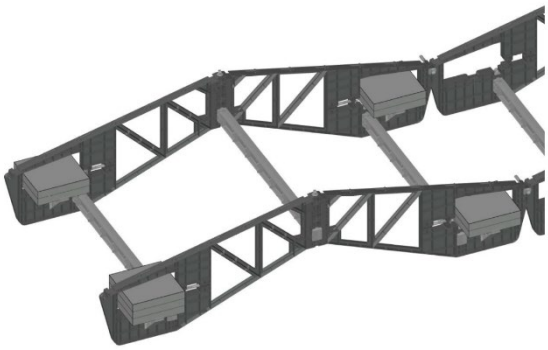
> 60 cm

5. Ballast

- Ballast must be applied to the shelters according to the ballast plan calculated using the AMFISOL ballast tool. The AMFISOL ballast tool will calculate the ballast per shelter, based on the in the ballast tool selected environmental parameters like country, base wind speed, terrain category, consequence class, ...
- Depending on the use of the parallel connection or not:
  - Ballast is only required on the outer shelters of the solar field when the parallel connection is used. See green colored areas.
  - When the parallel connection is not used, ballast will be required on the outer shelters and the shelters next to the outer shelters. See green and red colored areas.

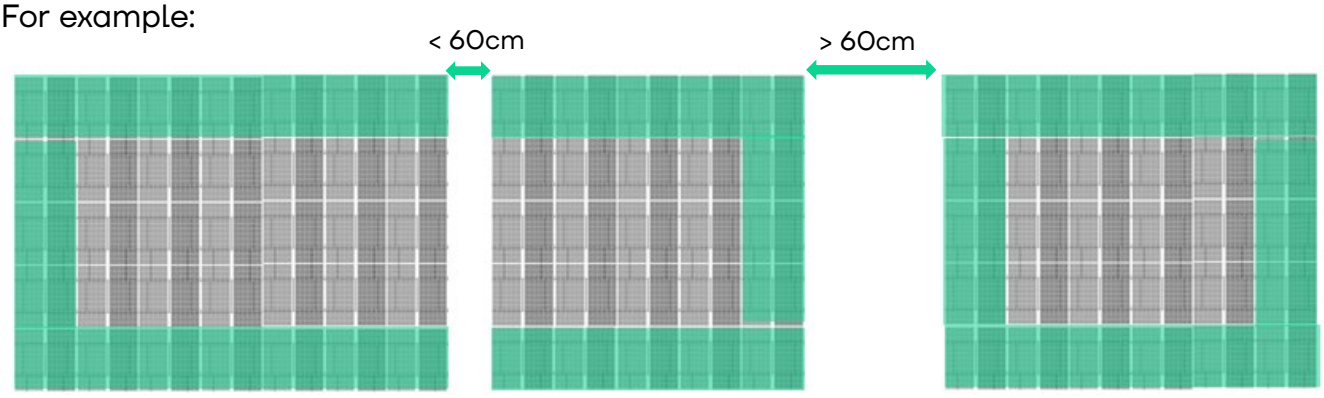


DESIGN INSTRUCTIONS



- Shelters that need to be foreseen from ballast need ballast holders. Four ballast holders per shelter or less, if less than four concrete tiles per shelter are required.
- Concrete ballast tiles must be distributed evenly across the four ballast chambers of each AMFISOL shelter. The maximum permitted difference in the number of ballast tiles per ballast chamber within the same shelter is one concrete tile.
- Chambers containing the largest number of ballast stones should always be positioned as close as possible to the outer edge of the solar panel field.
- In some case, depending on the selected environmental parameters, it will be required to put ballast on the inner shelters of the solar field as well, but this will be indicated in the layout of the AMFISOL ballast tool.
- When the space between two subfields is more than 60 cm, both of the subfields need to be ballasted in the outer shelters of these subfields. When the space is less than 60 cm these subfields are in the 'protected wind zone' and do not need extra ballast. See art. 4.2 service paths.

For example:



	Shelter with ballast
	Shelter without ballast

6. Terrain surface: positioning of a shelter

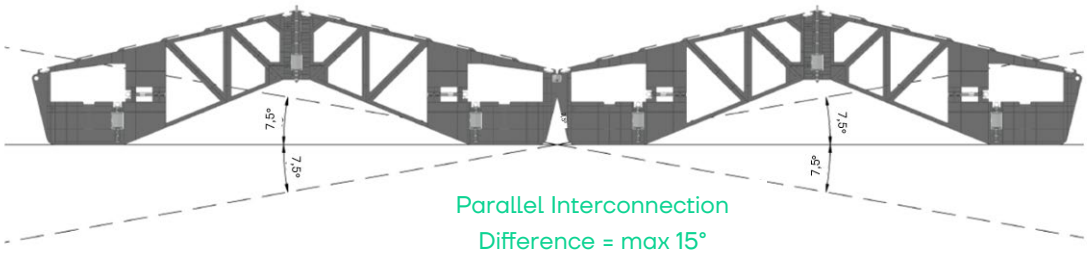
The Amfisol ground mounting system deals with unevenness in the ground surface.

6.1 Slope off the terrain

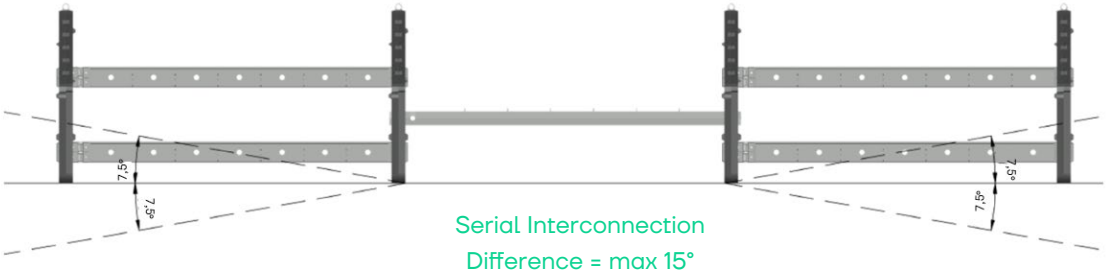
The Amfisol ground mounting system can be used on terrains with a slope up to five degrees. When the slope is bigger, please contact our technical support team to discuss possibilities.

6.2 Level differences between two shelters

The hinge mechanism of the parallel and serial interconnection allows two adjacent shelters to have a relative inclination of up to **15°** toward each other. This inclination in the same direction cannot be continued for more than two shelters, see 6.1 slope off the terrain.



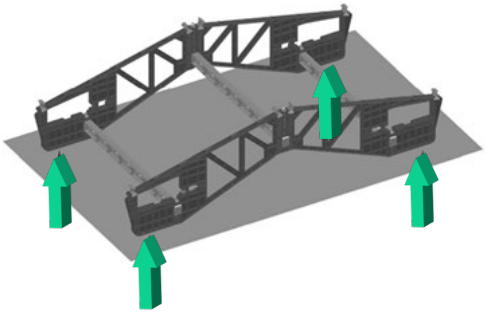
Parallel Interconnection
Difference = max 15°

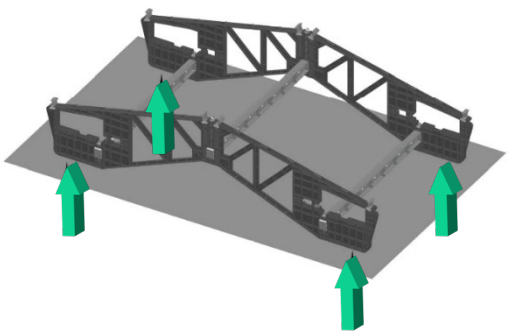


Serial Interconnection
Difference = max 15°

6.3 Level differences within one shelter

The four ground contact points of each shelter must lie within a single plane. This does not mean that this plane must be horizontal, it can be inclined in any direction, provided that the inclination remains within the limits tolerated by the parallel or serial connection between two adjacent shelters.





For more information, please check out our website, Youtube page, or contact us. Thanks for using Amfisol!