

# Installation manual for FuturaSun PV Modules

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## PV MODULE CLAMPING ZONES

## MOUNTING METHOD: CLAMPING

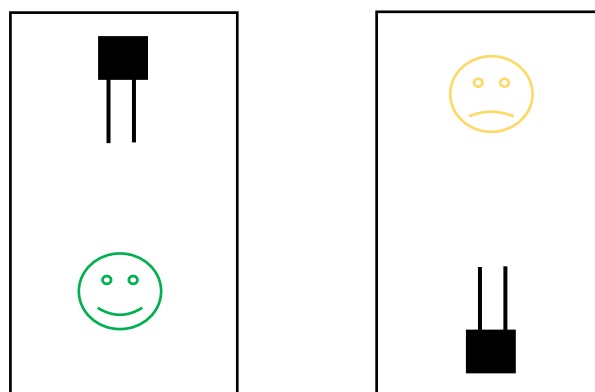
Top or bottom clamping methods will vary and are dependent on the mounting structures. Please follow the mounting guidelines recommended by the mounting system supplier.

Each module must be securely fastened at a minimum of four points on two opposite sides. The clamps should be positioned symmetrically. The clamps should be positioned according to the authorized position ranges.

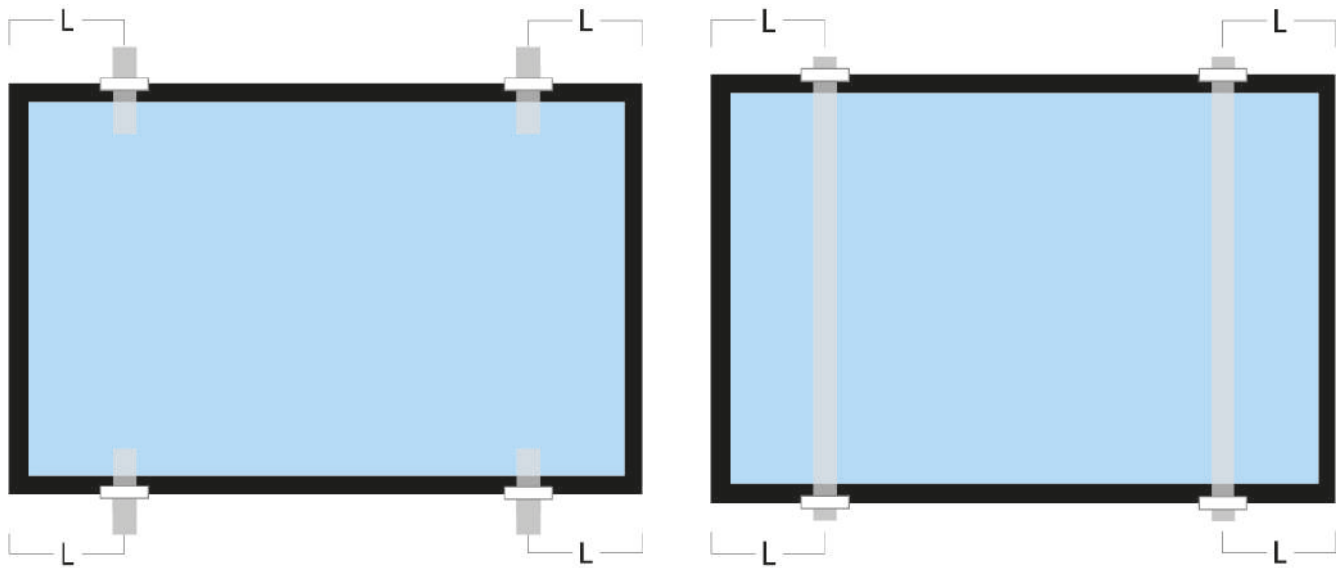
*Mounting using clamping method:*

- FUTURASUN recommends the use of clamps.
- When using clamps, it is possible to mount the modules in horizontal (the shorter side of one module facing the shorter side of the neighboring module) or in vertical (the longer sides facing each other) configuration. It is recommended to always use stainless steel screws and bolts.
- The modules can be mounted on continuous base structures (inclined or horizontal) such as rails or similar.
- Both base structures must be mounted at the same distance from the symmetrical axis (vertical or horizontal) of the module.
- In vertical configuration, it is strongly recommended to place the supporting elements nearby the mounting holes. This is necessary in order to maintain a correct load distribution.
- In according with Eurocodes - EN 1991 it is **not possible to fix the modules in not appropriate areas** in Zone 3,4,5 of **Alpine Region**. Shape coefficients must be taken into account.
- At least 20 mm spacing must be maintain between modules.

**ATTENTION:** in the case of installation with modules in the vertical position, it is preferable to maintain the Junction Box located in the upper part of the module. This practice will help reduce, as much as possible, contact between any standing water and the Junction Box, and avoid possible water infiltration.



Installation in vertical position



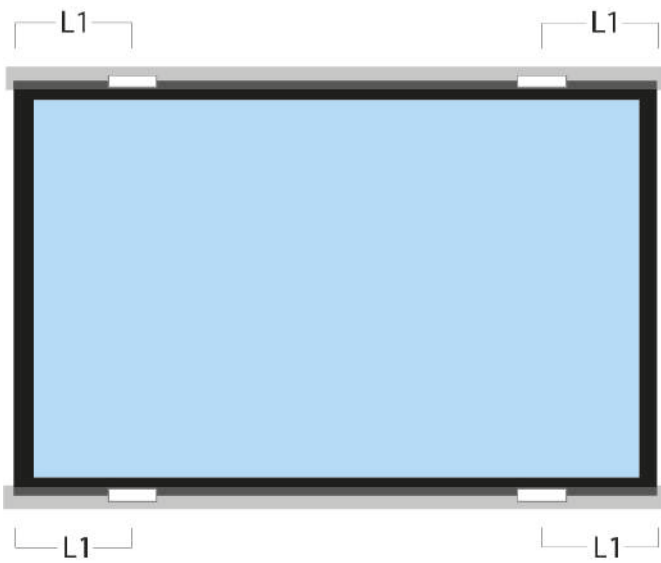
1. Four clamps on long side of frame and rails (or segment of rails) parallel to the short side frame

Module Types	Max Mechanical Load (Pa)					
	+ 2000 / - 1600	+ 2400 / - 1600	+3600 / - 1600	+5400 / - 2400	+5400 / - 3600	+7000 / - 5400
	L Range (mm)					
FU xxx M Silk Pro – 120 cells	0/341	541/706	341/541	-	-	-
FU xxx M Silk Pro – 144 cells	0/314	627/843	427/627	-	-	-



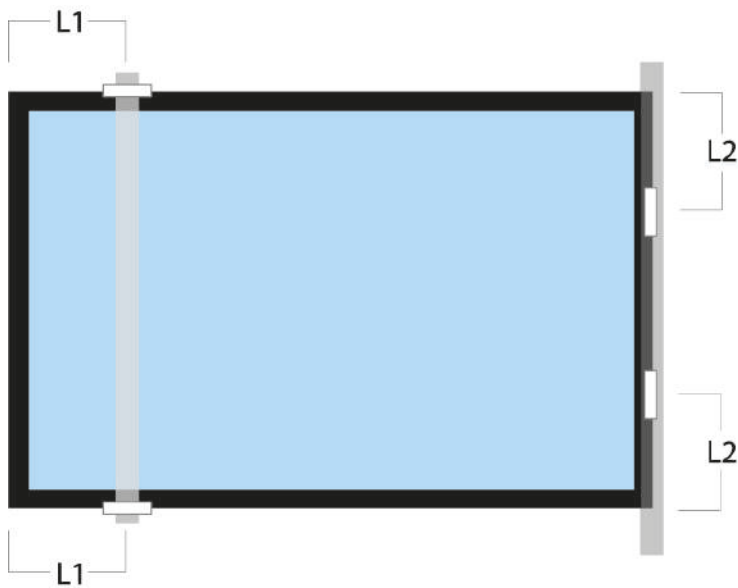
2. Four clamps on short side of frame and rails parallel to the short side frame.

Module Types	Max Mechanical Load (Pa)	
	+/-1000	+/-1200
	L Range (mm)	
FU xxx M Silk Pro – 120 cells	0/100	100/157
FU xxx M Silk Pro – 144 cells	100/157	-



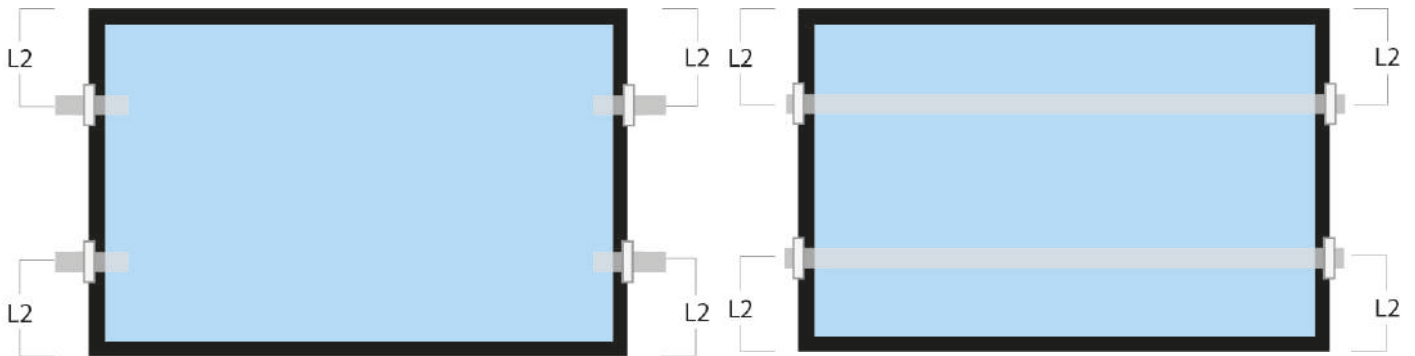
3. Four clamps on long side of frame and rails parallel to the long side frame.

Module Types	Max Mechanical Load (Pa)	
	+ 2400 / - 1600	+ 3600 / - 1600
L1 Range (mm)		
FU xxx M Silk Pro – 120 cells	541/706	341/541
FU xxx M Silk Pro – 144 cells	627/843	427/627



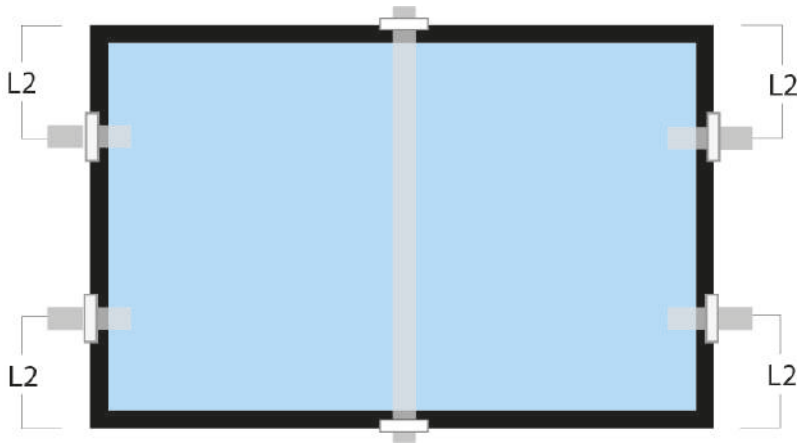
4. Two clamps on the long side and two clamps on the short side of frame. Rails run parallel to the short side frame.

Module Types	Max Mechanical Load (Pa)	
	+ 2400 / - 1600	
	L1 Range (mm)	L2 Range (mm)
FU xxx M Silk Pro – 120 cells	341/541	100/157
FU xxx M Silk Pro – 144 cells	427/627	100/157



5. Four clamps on short side of frame and rails (or segment of rails) parallel to the long side frame.

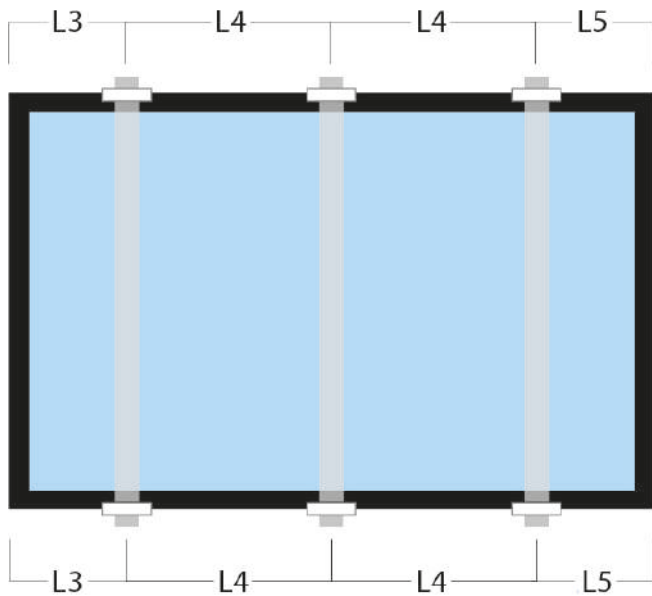
Module Types	Max Mechanical Load (Pa)		
	+ 2400 / - 1600	+ 2200 / - 2200	+ 2400 / - 2400
L2 Range (mm)			
FU xxx M Silk Pro – 120 cells	100/157	-	-
FU xxx M Silk Pro – 144 cells	100/157	-	-



6. Four clamps mounting on short side of frame, and an additional support bar placed below the center of the module.

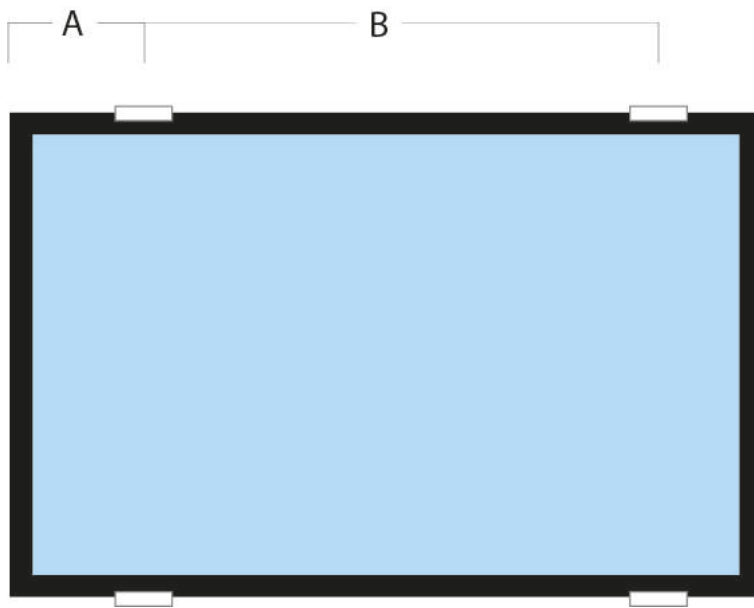
Module Types	Max Mechanical Load (Pa) L2
	Range (mm)
FU xxx M Silk Pro – 120 cells	0/157
FU xxx M Silk Pro – 144 cells	0/157





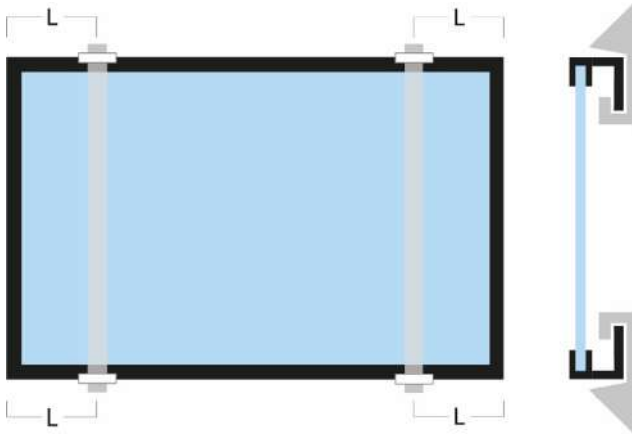
7. Six clamps on long side of frame and rails parallel to the short side frame.

Module Types	Max Mechanical Load (Pa)		
	+ 5400 / - 2400	+ 5400 / - 3600	+ 6000 / - 4000
	L3 & L5 Range (mm)		
FU xxx M Silk Pro – 120 cells	0/450	-	-
FU xxx M Silk Pro – 144 cells	0/550	-	-



### 8. Rail-less clamping

Module Types	A	B	Downforce (Pa)	Uplift (Pa)
FU xxx M Silk Pro – 120 cells	0/341	1412/1755	2400	1600
FU xxx M Silk Pro – 144 cells	0/427	1686/2094	1600	1600



9. Frame foot interlock four clamps on long side of frame, the fixing points are on the foot of frame.

Module Types	Max Mechanical Load (Pa)					
	+ 2000 / - 1600	+ 2400 / - 1600	+3600 / - 1600	+5400 / - 2400	+5400 / - 3600	+7000 / - 5400
	L Range (mm)					
FU xxx M Silk Pro – 120 cells	0/341	-	-	-	-	-
FU xxx M Silk Pro – 144 cells	-	-	-	-	-	-

FuturaSun srl  
Riva del Pasubio, 14  
35013 Cittadella (PD) - Italy  
VAT N° IT04635940283

Tel. +39 049 5979802  
[www.futurasun.com](http://www.futurasun.com)  
[info@futurasun.it](mailto:info@futurasun.it)