

# Installation manual for FuturaSun PV Modules

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## PV MODULE CLAMPING ZONES

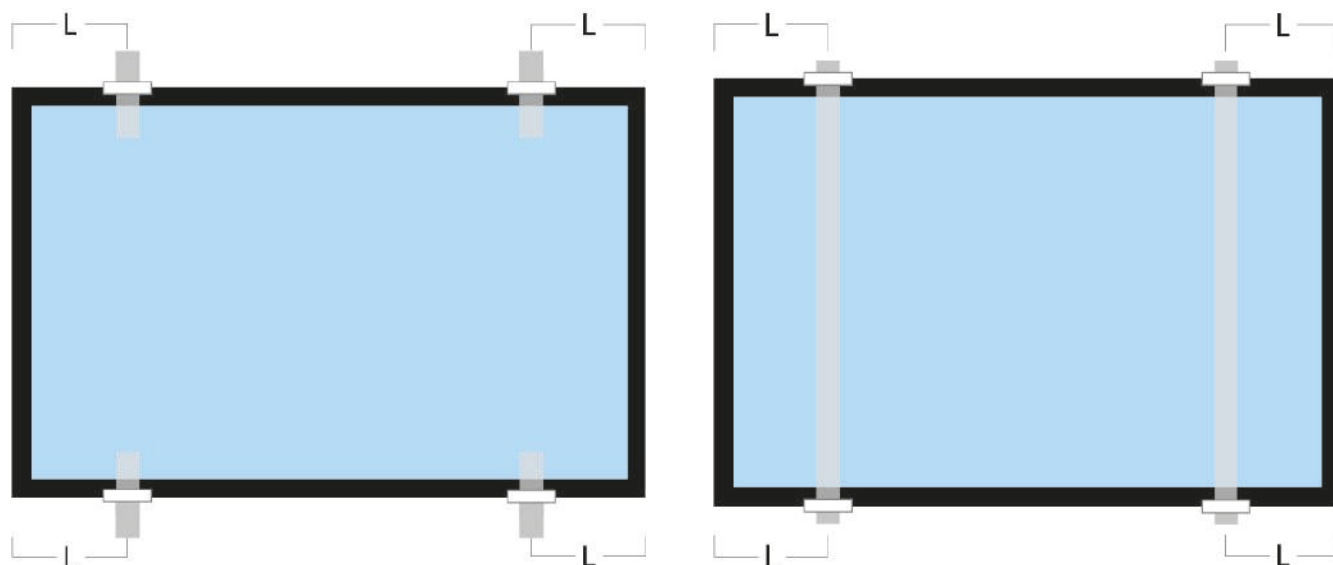
## MOUNTING METHOD: CLAMPING

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 accordance with Eurocodes - EN 1991, in the 3,4,5 area of the Alpine Region, the load capacity of module could be too low compared to what is necessary. The shape coefficient, the modules tilt and the installation layout must be taken into account. An accurate check must always be carried out by qualified technician.
- At least 20 mm spacing must be maintain between modules.



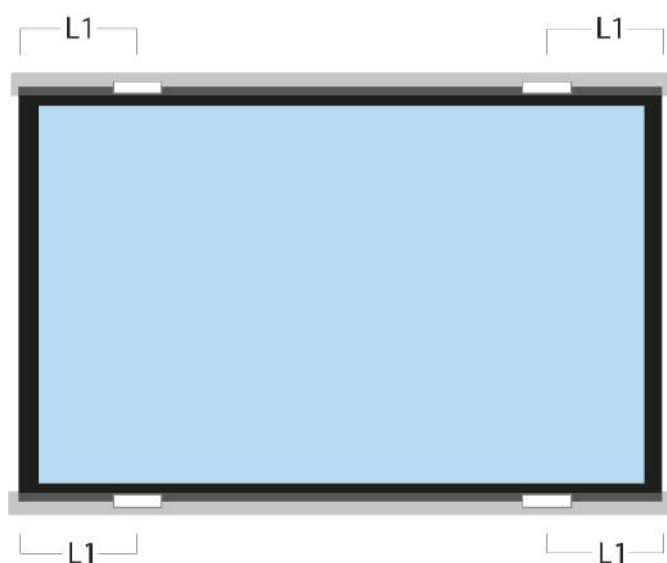
1. Four clamps on long side of frame and rails (or segment of rails) parallel to the short side frame

Module Types	Max Mechanical Load (Pa)		
	+ 2000 / -1600	+ 2400 / - 1600	+3600 / - 1600
	L Range (mm)		
FU xxx M Silk Pro 120 cells	0/250	350/520	250/350
FU xxx M Silk Pro 144 cells	0/350	450/650	350/450
FU xxx M Silk Plus 108 cells	0/250	350/520	250/350
FU xxx M Silk Plus 144 cells	0/350	450/650	350/450
FU xxx M Silk Premium 120 cells	0/250	350/520	250/350
FU xxx M Silk Premium 150 cells	0/350	450/650	350/450



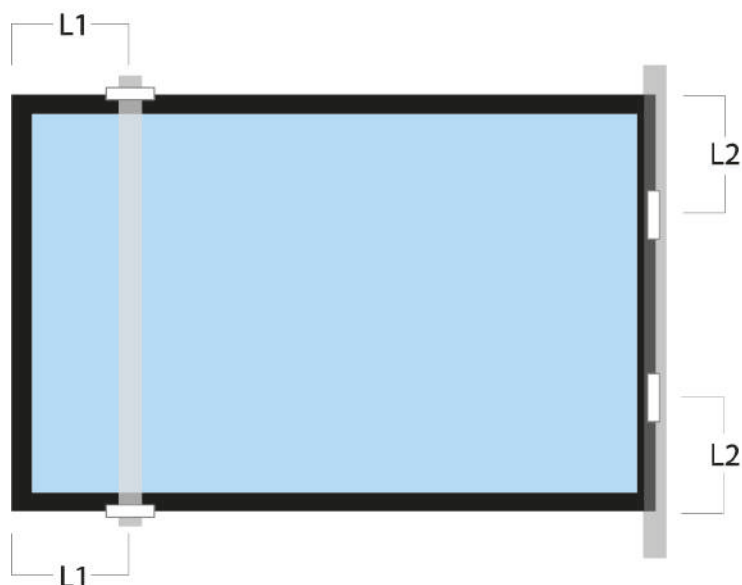
2. Four clamps on short side of frame and rails parallel to the short side frame.

Module Types	Max Mechanical Load (Pa)	
	+/-1000	+/-1200
	L Range (mm)	
FU xxx M Silk Pro 120 cells	0/100	100/200
FU xxx M Silk Pro 144 cells	0/200	-
FU xxx M Silk Plus 108 cells	0/100	100/200
FU xxx M Silk Plus 144 cells	0/200	-
FU xxx M Silk Premium 120 cells	0/100	100/200
FU xxx M Silk Premium 150 cells	0/200	-



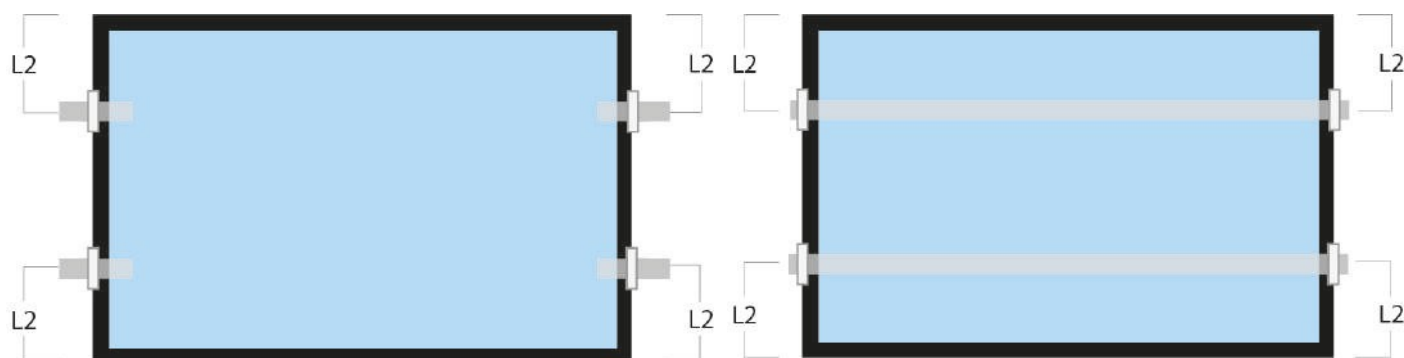
3. Four clamps on long side of frame and rails parallel to the long side frame.

Module Types	Max Mechanical Load (Pa)	
	+ 2000 / - 1600	+ 2400 / - 1600
	L1 Range (mm)	
FU xxx M Silk Pro 120 cells	350/520	250/350
FU xxx M Silk Pro 144 cells	450/650	350/450
FU xxx M Silk Plus 108 cells	350/520	250/350
FU xxx M Silk Plus 144 cells	450/650	350/450
FU xxx M Silk Premium 120 cells	350/520	250/350
FU xxx M Silk Premium 150 cells	450/650	350/450



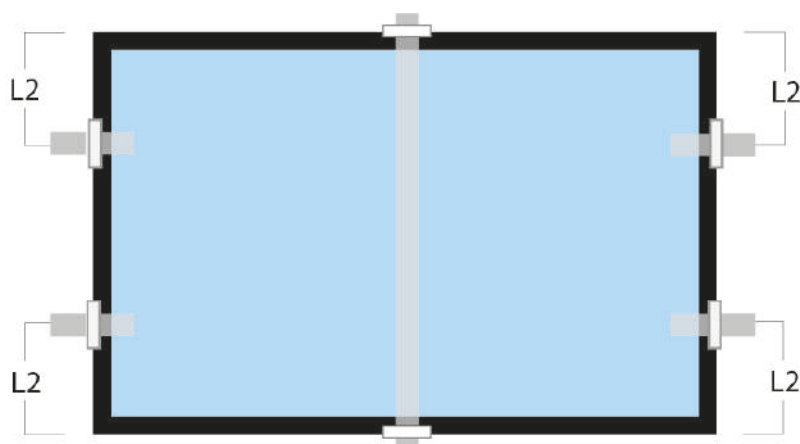
4. Two clamps on the long side and two clamps on the short side of frame. Rails run parallel to the short side frame.

Module Types	Max Mechanical Load (Pa)			
	+ 2400 / - 1600		+1000 / -1000	
	L1 Range (mm)	L2 Range (mm)	L1 Range (mm)	L2 Range (mm)
FU xxx M Silk Pro 120 cells	250/450	100/250	-	-
FU xxx M Silk Pro 144 cells	-	-	250/450	100/250
FU xxx M Silk Plus 108 cells	250/450	100/250	-	-
FU xxx M Silk Plus 144 cells	-	-	250/450	100/250
FU xxx M Silk Premium 120 cells	250/450	100/250	-	-
FU xxx M Silk Premium 150 cells	-	-	250/450	100/250



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

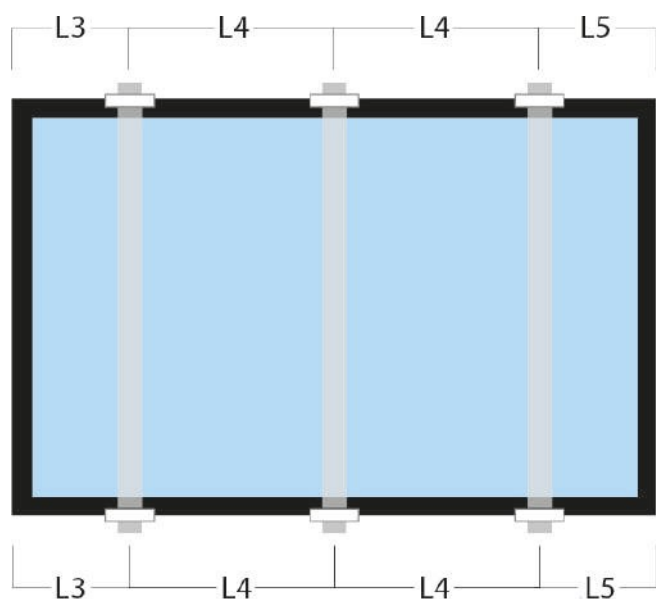
Module Types	Max Mechanical Load (Pa)		
	+ 2400 / - 1600	+ 1600 / - 1000	+ 2400 / - 2400
	L2 Range (mm)		
FU xxx M Silk Pro 120 cells	150/250	-	-
FU xxx M Silk Pro 144 cells	-	150/250	-
FU xxx M Silk Plus 108 cells	150/250	-	-
FU xxx M Silk Plus 144 cells	-	150/250	-
FU xxx M Silk Premium 120 cells	150/250	-	-
FU xxx M Silk Premium 150 cells	-	150/250	-



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

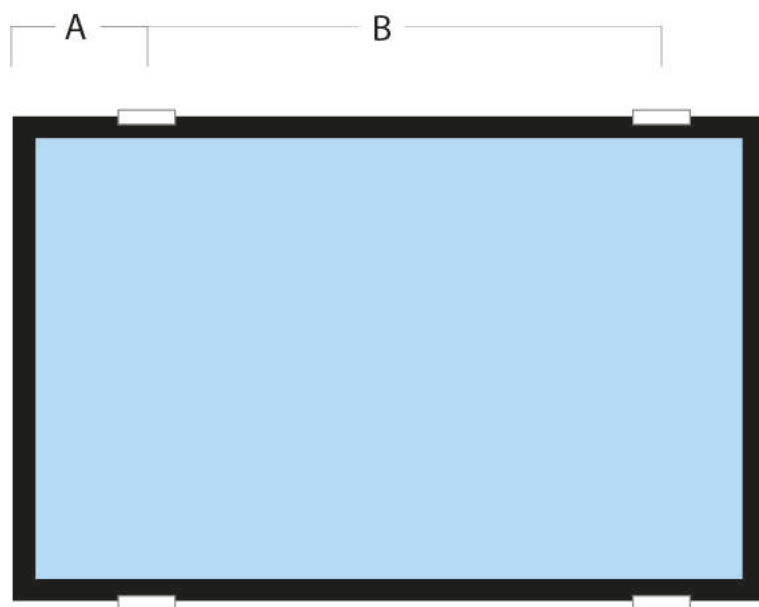
Module Types	Max Mechanical Load (Pa) L2	
	+ 3000 / - 2400	+ 1600 / - 1600
	Range (mm)	Range (mm)
FU xxx M Silk Pro 120 cells	0/200	-
FU xxx M Silk Pro 144 cells	-	0/200
FU xxx M Silk Plus 108 cells	0/200	-
FU xxx M Silk Plus 144 cells	-	0/200
FU xxx M Silk Premium 120 cells	0/200	-
FU xxx M Silk Premium 150 cells	-	0/200





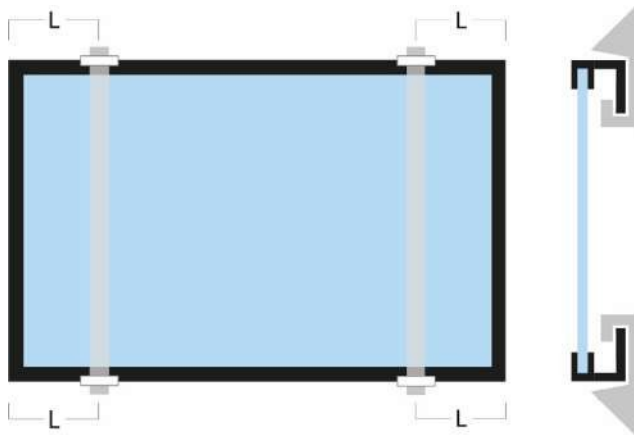
7. Six clamps on long side of frame and rails parallel to the short side frame.

Module Types	Max Mechanical Load (Pa)
	+ 5400 / - 2400
	L3 & L5 Range (mm)
FU xxx M Silk Pro 120 cells	0/450
FU xxx M Silk Pro 144 cells	0/550
FU xxx M Silk Plus 108 cells	0/450
FU xxx M Silk Plus 144 cells	0/550
FU xxx M Silk Premium 120 cells	0/450
FU xxx M Silk Premium 150 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
FU xxx M Silk Plus 108 cells	0/320	1402/1722	2400	1600
FU xxx M Silk Plus 144 cells	0/464	1815/2279	1600	1600
FU xxx M Silk Premium 120 cells	0/341	1411/1754	2400	1600
FU xxx M Silk Premium 150 cells	0/437	1748/2185	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
	L Range (mm)		
FU xxx M Silk Pro 120 cells	0/341	-	-
FU xxx M Silk Pro 144 cells	-	-	-
FU xxx M Silk Plus 108 cells	0/320	-	-
FU xxx M Silk Plus 144 cells	-	-	-
FU xxx M Silk Premium 120 cells	0/341	-	-
FU xxx M Silk Premium 150 cells	-	-	-





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