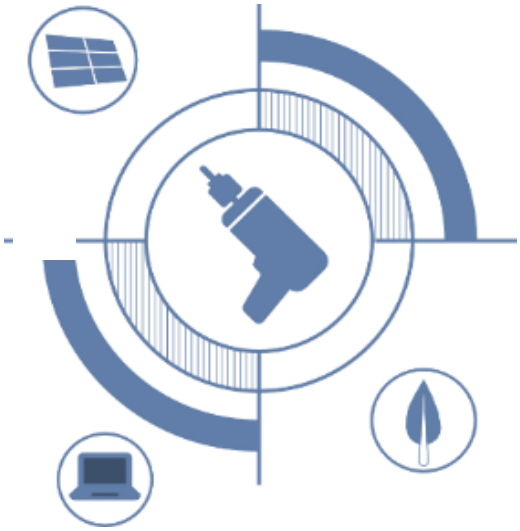
Trinasolar

ADDITIONAL INSTALLATION USER MANUAL



This document is intended to add mounting options in addition to the existing and described methods in Trina Solar User Manual.

In order to achieve the best use of installation of systems, mounting system shall be designed or selected according to the project requirements. Fixation (including bolts, clamps, hooks, etc.) used in a system shall not have failure (malfunctioned to cause loose or any other issues which may damage the PV modules) in any circumstance.

Please refer to the official User Manual for the requirements of clamps and the relevant exemption clauses.

Chapter 1 : Clamp requirements for test load

The testing load in following chapters are based on the test with clamp A, clamp B, and clamp C.

The description and schematic diagram of the clamps are provided below.

- Clamp A : A-surface matching clamp 50 mm (1.97 inch) length with thickness ≥4 mm;
- Clamp B: 50 mm (1.97 inch) length Clamp with thickness ≥4 mm (0.16 inch);
- Clamp C: 40 mm (1.57 inch) length Clamp with thickness ≥4 mm (0.16 inch);

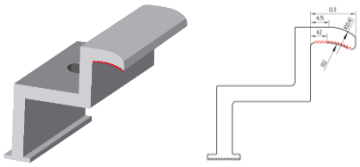


Figure 1 A surface matching clamp

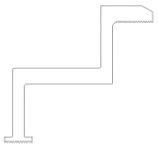


Figure 2 Demonstration Clamp B and Clamp C

Chapter 2：Test load and clamp range for different mounting options

Option 1: Short side clamping with 4 clamps and only punctual support underneath module frame

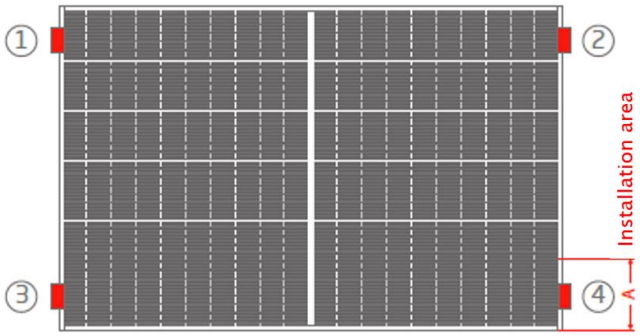
Graphic view	Description
	Clamp position can be within the range (clamping range refers to Table 1) for all 4 clamps attached to the module short side, clamping range can be asymmetrical, clamp 1&2 can have a different position from the module edge compared to clamp 3 & 4.
Legend	
	Module clamp which has to fulfill Trina’s minimum requirements in terms of grip length and grip depth.

Table 1: Maximum mechanical test loads and clamping ranges for option 1

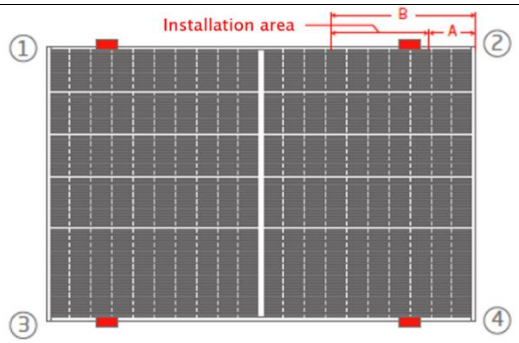
Clamp A:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range (A)
DE09R.B0 / DE09R.B5 / DE09R.B8 DE09R / DE09R.05 / DE09R.08	2400Pa	1800Pa	0-200mm
NEG9R.28 / NEG9R.20 / NEG9R.25 NEG9RC.27 / NEG9RC.20	2400Pa	1800Pa	0-200mm

Clamp B:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range (A)
DE09R.B0/DE09R.B5/DE09R.B8	2200Pa	1600Pa	0-200mm
DE09R/DE09R.05/DE09R.08	2200Pa	1600Pa	0-100mm
DE19 / DEG19C.20	1000Pa	800Pa	0-200mm
DE20 / DEG20C.20	1000Pa	800Pa	0-200mm
DE21 / DEG21C.20	1000Pa	800Pa	0-200mm

Option 2: Long side clamping and only punctual support underneath module frame

Graphic view	Description
	Clamp position can be within the range (clamping range refers to Table 2) for all 4 clamps attached to the module long side; the clamps 1 & 3 can have a different distance to the edge than the clamps 2 & 4 (asymmetrical clamping).

Legend	
	Module clamp which has to fulfill Trina' s minimum requirements in terms of grip length and grip depth.

Table 2: Maximum mechanical test loads and clamping ranges for option 2.

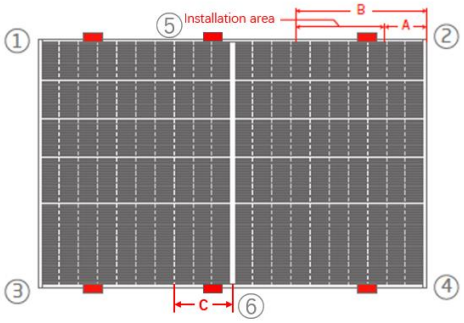
Clamp A:

Product Code	Clamping Range A-B (mm)			
	100-200	200-290	290-370	370-550
	Maximum Test Load (Front side +/ Back side -)			
DE09R.B0/DE09R.B5/DE09R.B8 DE09R/DE09R.05/DE09R.08	+2400/-2000	3600/3000	+3000/-2400	+2400/-2000
NEG9R.28/NEG9R.20/NEG9R.25 NEG9RC.27/NEG9RC.20	+2400/-2000	+2400/-2000	+3000/-2400	+2400/-2000

Clamp B:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range(mm)	
			A	B
DE09R DE09R.05 DE09R.08	2400Pa	2400Pa	130	199
	3600Pa	3000Pa	200	330
	2400Pa	2400Pa	331	381
	2200Pa	2200Pa	382	600
NEG9R.28 NEG9R.20	2000Pa	2000Pa	130	289
	3000Pa	2400Pa	290	370
	2000Pa	2000Pa	371	431
DE19R	1800Pa	1100Pa	442	742
DEG19RC.20 NEG19RC.20	2400Pa	2200Pa	442	642
	2000Pa	1800Pa	643	742
DE19	1200Pa	1000Pa	100	439
	1500Pa	1500Pa	440	540
	1200Pa	1000Pa	541	600
DE20	1200Pa	1000Pa	100	600
DE21	1000Pa	800Pa	100	600

Long side clamping with 6 clamps

Graphic view	Description
	Clamp position can be within the range (clamping range refers to Table 3) for all 6 clamps attached to the module long side; the clamps 1 & 3 can have a different distance to the edge than the clamps 2 & 4 (asymmetrical clamping); the clamp 5 can have a different distance to the center than the clamp 6.

Legend	
	Module clamp which has to fulfill Trina' s minimum requirements in terms of grip length and grip depth.

Table 3: Maximum mechanical test loads and clamping ranges for Long side clamping with 6 clamps.

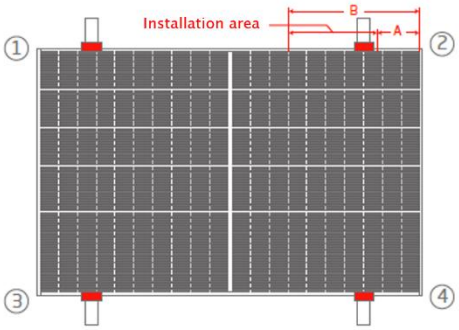
Clamp A:

Product Code	Clamping Range A-B, C (mm)		
	A-B = 0-200 C = 0-200	A-B = 200-380 C = 0-200	A-B = 380-550 C = 0-200
	Maximum Test Load (Front side +/ Back side -)		
DE09R.B0/DE09R.B5/DE09R.B8 DE09R/DE09R.05/DE09R.08	3600/-2400	3000/-2400	2400/-2000
NEG9R.28/NEG9R.20/NEG9R.25 NEG9RC.27/NEG9RC.20	3000/-2400	3000/-2400	2400/-2000

Clamp B:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range(mm)		
			A	B	C
DE09R DE09R.05 DE09R.08	3600Pa	2400Pa	0	200	200
	3000Pa	2400Pa	201	381	200
NEG9R.28 NEG9R.20 NEG9RC.27	3000Pa	2400Pa	0	200	200
	2000Pa	2000Pa	201	381	200
DE19	2000Pa	2000Pa	0	200	200
DE19R	2400Pa	1500Pa	442	742	250
DEG19RC.20 NEG19RC.20	2600Pa	2400Pa	442	742	250

Option 3: Long side clamping with crossbeam

Graphic view	Description
	Clamp position can be within the range (clamping range refers to Table 4) for all 4 clamps attached to the module long side; the clamps 1 & 3 can have a different distance to the edge than the clamps 2 & 4 (asymmetrical clamping).

Legend	
	Module clamp, which has to fulfill Trina' s minimum requirements in terms of grip length and grip depth. Higher load as per Installation Manual.

Table 4: Maximum mechanical test loads and clamping ranges for option 3.

Clamp A:

Product Code	Maximum Test Load (Front side +Back side -)		
	+3600/-3000	5400/4000	+6000/-4000
	Clamping Range(mm)		
DE09R.B0/DE09R.B5/DE09R.B8 DE09R/DE09R.05/DE09R.08	/	/	250-330
NEG9R.28/NEG9R.20/NEG9RC.27	A=100-300 A=350-600	A=300-350	/

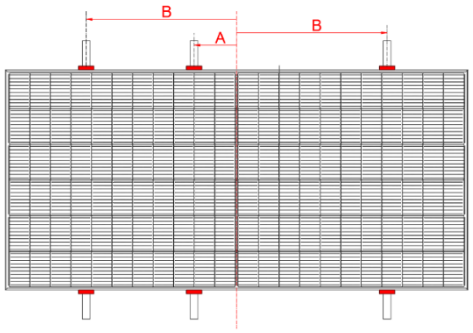
Clamp B:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range(mm)	
			A	B
NEG9R.28 / NEG9RC.27	5400Pa	4000Pa	270	370
DEG19RC.20 / NEG19RC.20	5400Pa	2400Pa	440	540
DE09R DE09R.05 DE09R.08	3200Pa	2400Pa	200	249
	6000Pa	4000Pa	250	330
	3000Pa	2400Pa	331	600
DE19R	1700Pa	1100Pa	200	600
DE19RC.20 / DE19R	1800Pa	1200Pa	200	600
DE18M(II)	1800pa	1800pa	200	600

Clamp C:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side −)	Clamping range(mm)	
			A	B
NEG9R.28 NEG9RC.27	5400Pa	2400Pa	290	370
	3000Pa	2400Pa	231	556
	2400Pa	1800Pa	100	600
DEG19RC.20 / NEG19RC.20	5400Pa	2400Pa	440	540

Long side clamping with 3 crossbeams

Graphic view	Description
	Positions of 3 crossbeams, 6 screws and 6 clamps (check Structure column in Table 5 for details) are consistent with the positions of the indicated 6 bolt holes on the original module. The exact clamping positions are also listed on Table 5. *Note: The position of A could be left or right to the module center line.*

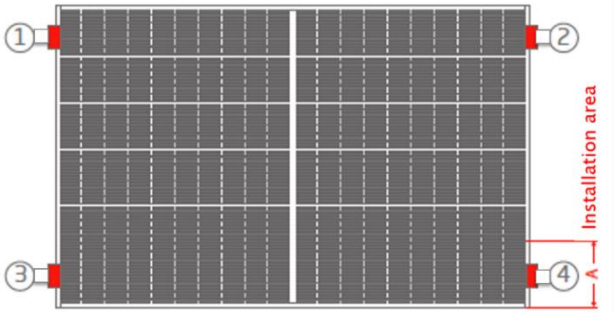
Legend	
	Module clamp which has to fulfill Trina' s minimum requirements in terms of grip length and grip depth.

Table 5: Maximum mechanical test loads and clamping ranges for Long side clamping with 3 crossbeams.

Clamp B:

Product Code	Structure	Maximum Test Load (Front side +)	Maximum Test Load (Back side −)	Clamping Position (mm)	
				A	B
NEG19RC.20 DEG19RC.20	3 crossbeams + 6 screws + 6 clamps	5400Pa	4000Pa	200	700
DE18M(II)	3 crossbeams + 6 screws + 6 clamps	5400Pa	3600Pa	200	700
DEG21C.20 NEG21C.20	3 crossbeams + 6 screws + 6 clamps	5400Pa	3600Pa	200	700
DE21	3 crossbeams + 6 screws + 6 clamps	5400Pa	3300Pa	200	700
DEG21C.20 NEG21C.20	3 crossbeams + 6 screws + 0 clamps	5400Pa	2800Pa	200	700

Option 4: Clamping on short side with crossbeam

Graphic view	Description
	Clamp position can be within the range 0 – xxx mm (clamping range refers to Table 6) for all 4 clamps attached to the module short side, clamping range can be asymmetrical, clamp 1&2 can have a different position from the module edge compared to clamp 3 & 4.

Legend	
	Module clamp which has to fulfill Trina’s minimum requirements in terms of grip length and grip depth.

Table 6: Maximum mechanical test loads and clamping ranges for Option 4.

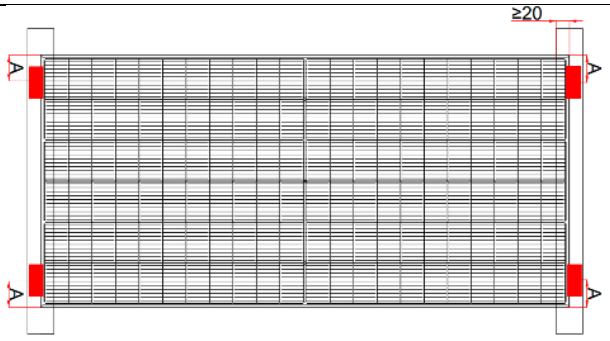
Clamp A:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range (A)
DE09R.B0/DE09R.B5/DE09R.B8 DE09R/DE09R.05/DE09R.08	2400Pa	2400Pa	0-100
NEG9R.28/NEG9R.20/NEG9R.25 NEG9RC.27/NEG9RC.20	2800Pa	2400Pa	0-100

Clamp C:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range (A)
NEG9R.28 NEG9RC.27	2800Pa	1600Pa	0-100mm
DEG19RC.20 NEG19RC.20	2400Pa	700Pa	0-100mm

Option 5: Clamping on the short side with shared rail underneath

Graphic view	Description
	Use 4 clamps on the short side. Mounting rails run perpendicular to the long side frame. Overlapping length (perpendicular to the short side direction) of mounting rails and short side of module no less than 20 mm clamping range refers to Table 7

Legend

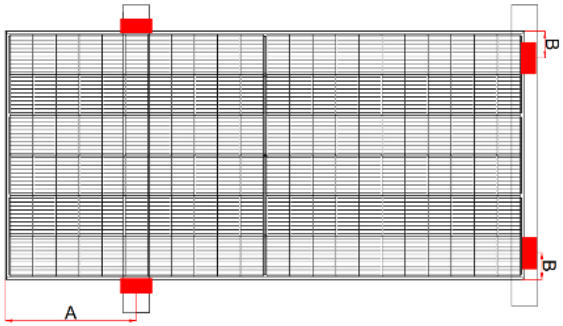
	Module clamp which has to fulfill Trina's minimum requirements in terms of grip length and grip depth.

Table 7: Maximum mechanical test loads and clamping ranges for Option 5.

Clamp A:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range (A)
DE09R.B0/DE09R.B5/DE09R.B8 DE09R/DE09R.05/DE09R.08	2400Pa	1800Pa	A=0-200
NEG9R.28/NEG9R.20/NEG9R.25 NEG9RC.27/NEG9RC.20	2400Pa	1800Pa	A=0-200

Option 6: Clamping on short side and long side with rail perpendicular to long side

Graphic view	Description
	Use 2 clamps on the short side and 2 clamps on the long side. Mounting rails run perpendicular to the long side frame clamping range refers to Table 8

Legend

	Module clamp which has to fulfill Trina's minimum requirements in terms of grip length and grip depth.

Table 8: Maximum mechanical test loads and clamping ranges for Option 6.

Clamp A:

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range A, B (mm)
DE09R.B0/DE09R.B5/DE09R.B8 DE09R/DE09R.05/DE09R.08	2400Pa	1800Pa	A=250-450 B =250
NEG9R.28/NEG9R.20/NEG9R.25 NEG9RC.27/NEG9RC.20	2400Pa	1800Pa	A=250-450 B =250

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