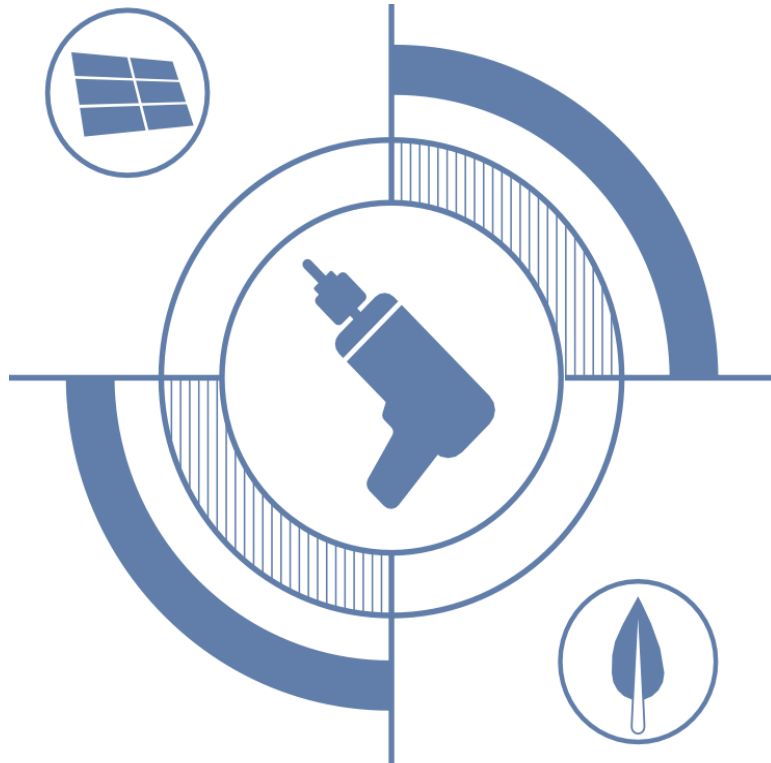




ADDITIONAL INSTALLATION USER MANUAL



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

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 be failure (malfunctioned to cause loose or any other issues which may damage the PV modules) in any circumstance. Trina Solar recommends a minimum clamp length of 50 mm (1.97 inch) with thickness of ≥ 3 mm (0.12 inch) for high-strength metal clamps.

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Option 1: Short side clamping with 4 clamps and rail underneath the module short side

Graphic view	Description
	<p>Clamp position can be within the range 0 – xxx mm (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.</p>

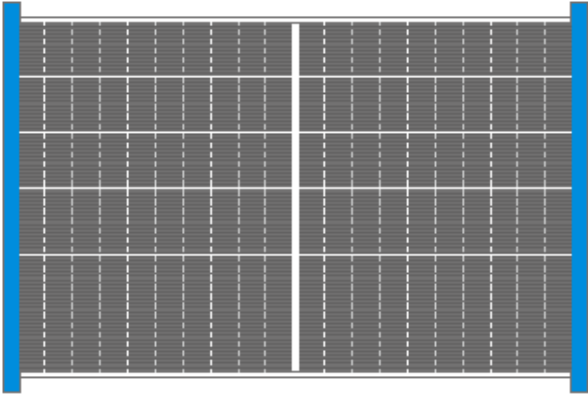
Legend

	<p>Solid mounting rail under the module which fully supports the module frame from underneath and is also used to fix the clamps into.</p>
	<p>Module clamp which has to fulfill Trina's minimum requirements in terms of grip length and grip depth.</p>

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

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range (A)
DE09 DE09.08 DE09.05	2400 Pa	2000 Pa	0 – 200mm
DE08M(II) DE08M.08(II) DD08M.08(II)	2000 Pa	1800 Pa	0 – 200mm
DEG8MC.20(II)	1800 Pa	1600 Pa	0 – 200mm
DE06M.08(II) DE06M(II) DD06M.05(II) DE06X.05(II)	2000Pa	1800 Pa	0 – 200mm
DE15M(II)	1600 Pa	1000 Pa	0 – 200mm
DEG15MC.20(II) PEG15H.20	1600 Pa	1000 Pa	0 – 200mm
DE15V(II)	1200 Pa	800 Pa	0 – 200mm
DEG15VC.20(II)	1300 Pa	1000 Pa	0 – 200mm
DE17M(II)	1600 Pa	1000 Pa	0 – 200mm
DEG17MC.20(II)	1600 Pa	1000 Pa	0 – 200mm
DE18M(II)	1200 Pa	1000 Pa	0 – 200mm
DEG18MC.20(II)	1300 Pa	1000 Pa	0 – 200mm
DE19 DEG19C.20	1200 Pa	800 Pa	0 – 200mm
DE20 DEG20C.20	1200 Pa	800 Pa	0 – 200mm
DE21 DEG21C.20	1200 Pa	800 Pa	0 – 200mm

Option 2: Short side slide-in/insertion

Graphic view	Description
	<p>Module short sides are inserted into slide-in rails completely.</p>

Legend


	<p>Solid mounting rail supporting the module frame from underneath and from the top (C-shape type of rail) in which the module frame is held, no clamp needed.</p>
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Table 2: Maximum mechanical test loads for option 2.

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)
DE09 DE09.08 DE09.05	2400 Pa	2000 Pa
DE08M(II) DE08M.08(II) DD08M.08(II)	2000 Pa	1800 Pa
DEG8MC.20(II)	1800 Pa	1600 Pa
DE06M.08(II) DE06M(II) DD06M.05(II) DE06X.05(II)	2000 Pa	1800 Pa
DE15M(II)	1000 Pa	1000 Pa
DEG15MC.20(II) PEG15H.20	1000 Pa	1000 Pa
DE15V(II)	1200 Pa	800 Pa
DEG15VC.20(II)	1300 Pa	1000 Pa
DE17M(II)	1000 Pa	1000 Pa
DEG17MC.20(II)	1000 Pa	1000 Pa
DE18M(II)	1000 Pa	1000 Pa
DEG18MC.20(II)	1000 Pa	1000 Pa
DE19 DEG19C.20	1200 Pa	800 Pa
DE20 DEG20C.20	1200 Pa	800 Pa
DE21 DEG21C.20	1200 Pa	800 Pa

Option 3: Short side clamping with 4 clamps and only punctual support underneath module frame

Graphic view	Description
	<p>Clamp position can be within the range 0 – xxx mm (clamping range refers to Table 3) 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.</p>

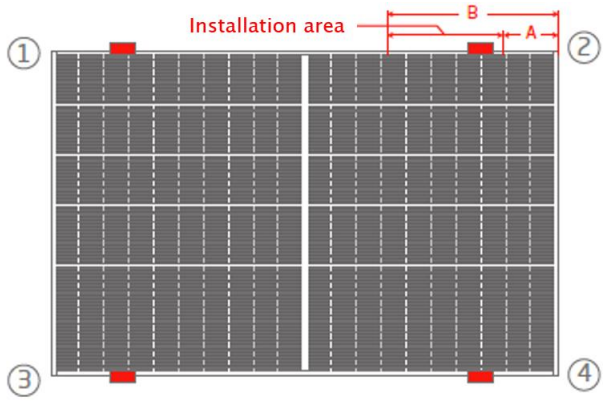
Legend

	Module clamp which has to fulfill Trina's minimum requirements in terms of grip length and grip depth.
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Table 3: Maximum mechanical test loads and clamping ranges for option 3.

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range (A)
DE09 DE09.08 DE09.05	2400 Pa	1800 Pa	0 – 200mm
DE08M(II) DE08M.08(II) DD08M.08(II)	1800 Pa	1800 Pa	0 – 200mm
DEG8MC.20(II)	1600 Pa	1600 Pa	0 – 200mm
DE06M.08(II) DE06M(II) DD06M.05(II) DE06X.05(II)	1800 Pa	1800 Pa	0 – 200mm
DE15M(II)	1600 Pa	1000 Pa	0 – 200mm
DEG15MC.20(II) PEG15H.20	1600 Pa	1000 Pa	0 – 200mm
DE15V(II)	1200 Pa	800 Pa	0 – 200mm
DEG15VC.20(II)	1300 Pa	1000 Pa	0 – 200mm
DE17M(II)	1600 Pa	1000 Pa	0 – 200mm
DEG17MC.20(II)	1600 Pa	1000 Pa	0 – 200mm
DE18M(II)	1300 Pa	1000 Pa	0 – 200mm
DEG18MC.20(II)	1300 Pa	1000 Pa	0 – 200mm
DE19 DEG19C.20	1200 Pa	800 Pa	0 – 200mm
DE20 DEG20C.20	1200 Pa	800 Pa	0 – 200mm
DE21 DEG21C.20	1200 Pa	800 Pa	0 – 200mm

Option 4: Long side clamping and only punctual support underneath module frame

Graphic view	Description
 <p>The diagram shows a solar module with four clamping points labeled 1, 2, 3, and 4. Clamps 1 and 3 are on the top edge, while clamps 2 and 4 are on the bottom edge. Dimension A is the distance from the edge to clamps 2 and 4, and dimension B is the distance from the edge to clamps 1 and 3. A red shaded area at the top is labeled 'Installation area'.</p>	<p>Clamp position can be within the range xxx – xxx mm (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).</p>

Legend


	<p>Module clamp which has to fulfill Trina's minimum requirements in terms of grip length and grip depth.</p>
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Table 4: Maximum mechanical test loads and clamping ranges for option 4.

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range	
			A	B
DE09 DE09.08 DE09.05	2400 Pa	2000 Pa	100	500
DE09 DE09.08 DE09.05	3600 Pa	3000 Pa	200	400
DE08M(II) DE08M.08(II) DD08M.08(II)	1800 Pa	1800 Pa	100	600
DEG8MC.20(II)	1800 Pa	1800 Pa	100	600
DE06M.08(II) DE06M(II) DD06M.05(II) DE06X.05(II)	1800 Pa	1800 Pa	100	600
DE15M(II)	1800 Pa	1800 Pa	200	600
DEG15MC.20(II)	1800 Pa	1800 Pa	200	600
DE15V(II) DEG15VC.20(II)	1200 Pa	1200 Pa	200	600
DE17M(II)	1800 Pa	1800 Pa	200	600
DEG17MC.20(II)	1800Pa	1800 Pa	200	600
DE18M(II)	1700 Pa	1700 Pa	200	600
DEG18MC.20(II)	1700 Pa	1700 Pa	200	600

Option 5: Long side 4 points clamping with crossbeam

Graphic view	Description
<p>The graphic shows a solar panel with four clamps. Clamps 1 and 3 are positioned on the top edge, and clamps 2 and 4 are on the bottom edge. Dimensions A and B are indicated for the installation area. A red bar represents the clamp location.</p>	<p>Clamp position can be within the range xxx – xxx mm (clamping range refers to Table 5) 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).</p>

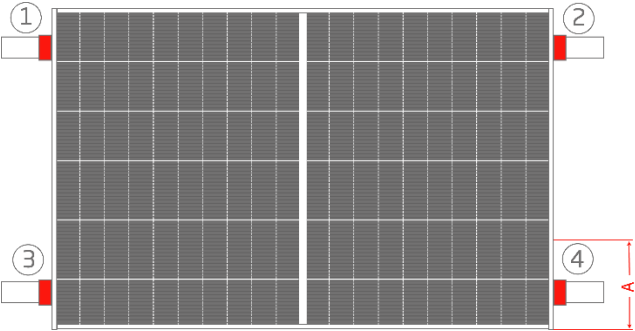
Legend

	<p>Module clamp, which has to fulfill Trina's minimum requirements in terms of grip length and grip depth. Higher load as per Installation Manual.</p>
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Table 5: Maximum mechanical test loads and clamping ranges for option 5.

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range	
			A	B
DE08M(II) DE08M.08(II) DD08M.08(II)	1800 Pa	1800 Pa	100	600
DE08M(II) DE08M.08(II) DD08M.08(II)	2000 Pa	2000 Pa	200	500
DE09 DE09.08 DE09.05	2400 Pa	2000 Pa	100	500
DE09 DE09.08 DE09.05	3600 Pa	3000 Pa	200	400
DE15V(II) DEG15VC.20(II)	1000 Pa	800 Pa	100	600
DE15V(II) DEG15VC.20(II)	1200 Pa	1200 Pa	200	500
DD06M.05(II) DE06X.05(II)	1800 Pa	1800 Pa	100	600
DD06M.05(II) DE06X.05(II)	2000 Pa	2000 Pa	200	500

Option 6: Short side 4 points clamping with crossbeam

Graphic view	Description
	<p>Clamp position can be within the range xxx – xxx mm (clamping range refers to Table 6) for all 4 clamps attached to the module long side; the clamps 1 & 2 can have a different distance to the edge than the clamps 3 & 4 (asymmetrical clamping).</p>

Legend


	<p>Module clamp, which has to fulfill Trina’s minimum requirements in terms of grip length and grip depth.</p>
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Table 6: Maximum mechanical test loads and clamping ranges for option 6.

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range (A)
DE09 DE09.08 DE09.05	2400 Pa	2400 Pa	150-250
DE17M(II)	1800 Pa	1200 Pa	150-250
DE18M(II)	1600 Pa	1000 Pa	150-250
DE08M(II) DE08M.08(II) DD08M.08(II)	2400 Pa	2400 Pa	150-250

Option 7: Four long side clamps (1-4) and only punctual support underneath module frame and two additional punctual support points (5 & 6) with/without clamps

Graphic view	Description
	<p>Clamp position can be within the range xxx – xxx mm (clamping range refers to Table 7) 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); the support points 5 & 6 use with clamps.</p>
Legend	
	<p>Module clamp, which has to fulfill Trina's minimum requirements in terms of grip length and grip depth. Higher load as per Installation Manual.</p>

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

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range		
			A	B	C
DE09 DE09.08 DE09.05	3600 Pa	2400 Pa	0-200	0-200	400
DE18M(II)	2400 Pa	1800 Pa	0-200	0-200	400
DE15V(II) DEG15VC.20(II)	2100 Pa	1500 Pa	0-200	0-200	400
DE06X.05(II)	3600 Pa	2400 Pa	0-200	0-200	400

NOTE:

The support points 5 & 6 can also use without clamps, if so, the maximum test load (back side -) will be

- 1800 Pa for DE09 / DE09.08 / DE09.05
- 1500 Pa for DE18M(II)
- 800 Pa for DE15V(II) / DEG15VC.20(II)
- 1800 Pa for DE06X.05(II)

Option 8: Four short side clamps (1-4) and only punctual support underneath module frame and two additional punctual support points (5 & 6) with/without clamps

Graphic view	Description
	<p>Clamp position can be within the range 0 – xxx mm (clamping range refers to Table 8) for all 4 clamps attached to the module short side, clamping range can be asymmetrical, clamp 1&2 can have a different position form the module edge compared to clamp 3 & 4; the support points 5 & 6 use with clamps.</p>

Legend

	<p>Module clamp, which has to fulfill Trina’s minimum requirements in terms of grip length and grip depth.</p>
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Table 8: Maximum mechanical test loads and clamping ranges for option 8.

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range		
			A	B	C
DE09 DE09.08 DE09.05	3000 Pa	2400 Pa	0-200	0-200	600
DE08M(II) DE08M.08(II) DD08M.08(II)	2000 Pa	2000 Pa	0-200	0-200	600
DEG8MC.20(II)	1800 Pa	1800 Pa	0-200	0-200	600
DE15V(II) DEG15VC.20(II)	1500 Pa	1500 Pa	0-200	0-200	600
DE18M(II)	1800 Pa	1800 Pa	0-200	0-200	600

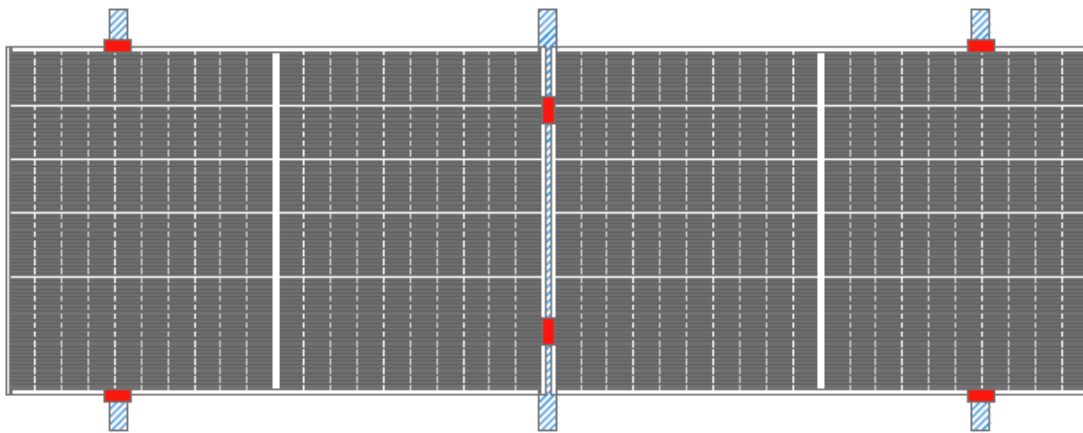
NOTE:

The support points 5 & 6 can also use without clamps, if so, the maximum test load (back side -) will be

- 1800Pa for DE09 / DE09.05 / DE09.08
- 1800 Pa for DE08M(II) / DE08M.08(II) / DD08M.08(II)
- 1600 Pa for DEG8MC.20(II)
- 800 Pa for DE15V(II) / DEG15VC.20(II)
- 1000 Pa for DE18M(II)

Option 9: Hybrid clamping with clamps on long and short side and solid rails supporting from underneath

Graphic view



Legend



	Solid mounting rail under the module which fully supports the module frame from underneath and is also used to fix the clamps into.
	Module clamp, which has to fulfill Trina's minimum requirements in terms of grip length and grip depth.

Table 9: Maximum mechanical test loads and clamping ranges for option 9.

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range	
			short side	long side
DE09 DE09.08 DE09.05	2400 Pa	1800 Pa	100-250	250-450
DE08M(II) DE08M.08(II) DD08M.08(II)	1800 Pa	1800 Pa	100-250	250-450
DE15V(II) DEG15VC.20(II)	1200 Pa	800 Pa	100-250	250-450
DE17M(II)	1600 Pa	1000 Pa	100-250	250-450
DEG17MC.20(II)	1600 Pa	1000 Pa	100-250	250-450
DE18M(II)	1200 Pa	1000 Pa	100-250	250-450
DEG18MC.20(II)	1300 Pa	1000 Pa	100-250	250-450

Option 10: Four clamps which are clamping the module flange from underneath on the long side of the module

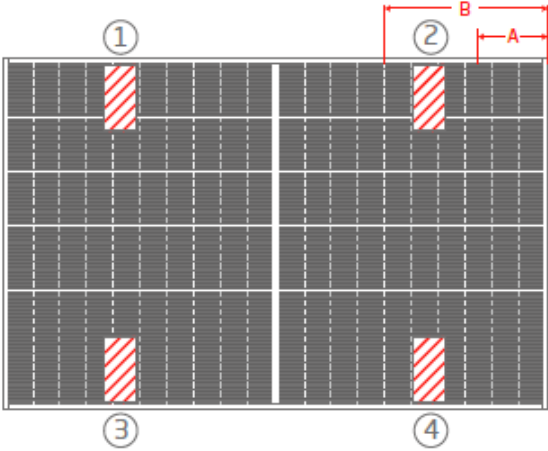

Graphic view	Description
	<p>Four clamps underneath the module are clamping the flange of the long side frame, the module frame is punctually supported from underneath.</p> <p>The clamp position can be within the 0 – xxx mm (clamping range refers to Table 10) for all 4 clamps attached to the module. The clamps 1 & 3 can have a different distance to the edge than the clamps 2 & 4 (asymmetrical clamping).</p>
Legend	
	Module clamps

Table 10: Maximum mechanical test loads and clamping ranges for option 10.

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range	
			A	B
DE09 DE09.08 DE09.05	2400 Pa	2000 Pa	100	500
DE08M(II) DE08M.08(II) DD08M.08(II)	1800 Pa	1800 Pa	100	600
DE15V(II) DEG15VC.20(II)	1200 Pa	1200 Pa	200	600
DE17M(II)	1800 Pa	1800 Pa	200	600
DEG17MC.20(II)	1800 Pa	1800 Pa	200	600
DE18M(II)	1700 Pa	1700 Pa	200	600
DEG18MC.20(II)	1700 Pa	1700 Pa	200	600
DD06M.05(II) DE06X.05(II)	1800 Pa	1800 Pa	100	600


Option 11: Four clamps which are clamping the module flange from underneath on the short side of the module

Graphic view		Description
		<p>Four clamps underneath the module are clamping the flange of the short side frame, the module frame is punctually supported from underneath.</p> <p>The clamp position can be within the 0 – xxx mm (clamping range refers to Table 11) for all 4 clamps attached to the module. The clamps 1 & 2 can have a different distance to the edge than the clamps 3 & 4 (asymmetrical clamping).</p>
Legend		
	Module clamps	

Table 11: Maximum mechanical test loads and clamping ranges for option 11.

Product Code	Maximum Test Load (Front side +)	Maximum Test Load (Back side -)	Clamping range (A)
DE09 DE09.08 DE09.05	2400 Pa	1800 Pa	0 - 200 mm
DE08M(II) DE08M.08(II) DD08M.08(II)	1800 Pa	1800 Pa	0 - 200 mm
DE15V(II)	1200 Pa	800 Pa	0 - 200 mm
DEG15VC.20(II)	1300 Pa	1000 Pa	0 - 200 mm
DE17M(II)	1600 Pa	1000 Pa	0 - 200 mm
DEG17MC.20(II)	1600 Pa	1000 Pa	0 - 200 mm
DE18M(II)	1300 Pa	1000 Pa	0 - 200 mm
DEG18MC.20(II)	1300 Pa	1000 Pa	0 - 200 mm
DD06M.05(II) DE06X.05(II)	1800 Pa	1800 Pa	0 - 200 mm

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The Right of Final Interpretation Belongs to Trina Solar.