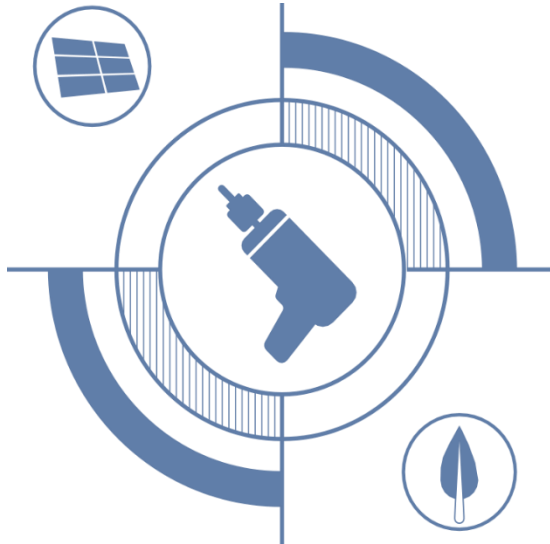




AMENDMENT TO USER MANUAL







This document is intended to add mounting options in addition to the already existing and described methods within the **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. Fixations (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 or of equivalent mechanical strength.

The mechanical loads described in this amendment are the test loads. For calculating the equivalent maximum design loads, please refer to Chapter 6.2 **INSTALLATION METHOD** in **Trina Solar User Manual**.

Legend in the document:

	<i>Solid mounting rail under the module which fully supports the module frame from underneath and is also used to fix the clamps into.</i>
	<i>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.</i>
	<i>Module clamp</i>
	<i>Module hook/clamp</i>

**The clamp shall not exceed the outer edge of the module frame.*

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For the latest document please refer to Trina Solar official website: www.trinasolar.com.

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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>

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

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range (A)
DE06M.08(II) DE06M(II) DD06M.05(II) DE06X.05(II)	2000Pa	1800 Pa	0-200
DE15M(II) DE15H(II)	1600 Pa	1000 Pa	0-200
DEG15MC.20(II) PEG15H.20	1600 Pa	1000 Pa	0-200
DE15V(II)	1200 Pa	800 Pa	0-200
DEG15VC.20(II)	1300 Pa	1000 Pa	0-200
DE19 DEG19C.20	1200 Pa	800 Pa	0-200
DE20 DEG20C.20	1200 Pa	800 Pa	0-200
DE21 DEG21C.20	1200 Pa	800 Pa	0-200

Option 2 Short side slide-in/insertion

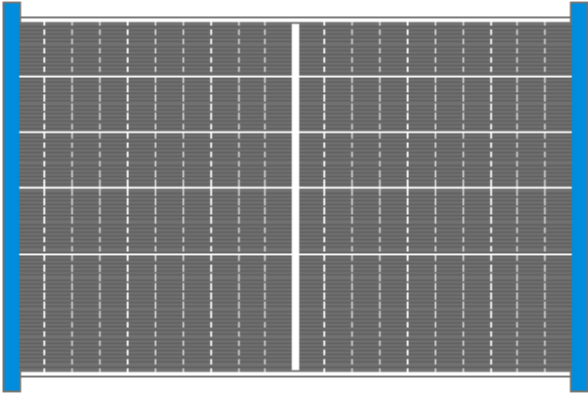
Graphic view	Description
	<p>Module short sides are inserted into slide-in rails completely.</p>

Table 2: Maximum mechanical test loads for option 2.

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)
DE06M.08(II) DE06M(II) DD06M.05(II) DE06X.05(II)	2000 Pa	1800 Pa
DE15M(II) DE15H(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
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>

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

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range (A)
DE06M.08(II) DE06M(II) DD06M.05(II) DE06X.05(II)	1800 Pa	1800 Pa	0-200
DE15M(II) DE15H(II)	1600 Pa	1000 Pa	0-200
DEG15MC.20(II) PEG15H.20	1600 Pa	1000 Pa	0-200
DE15V(II)	1200 Pa	800 Pa	0-200
DEG15VC.20(II)	1300 Pa	1000 Pa	0-200
DE19 DEG19C.20	1200 Pa	800 Pa	0-200
DE20 DEG20C.20	1200 Pa	800 Pa	0-200
DE21 DEG21C.20	1200 Pa	800 Pa	0-200

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

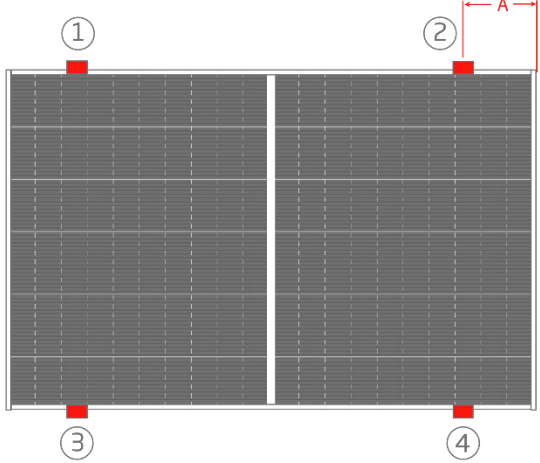
Graphic view	Description
 <p>The graphic shows a rectangular solar module frame with a grid pattern. Four red rectangular clamps are positioned at the corners: 1 (top-left), 2 (top-right), 3 (bottom-left), and 4 (bottom-right). A red dimension line labeled 'A' indicates the distance from the top edge to clamp 2. A vertical white line is drawn in the center of the frame.</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>

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

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range (A)
DE06M.08(II) DE06M(II) DD06M.05(II) DE06X.05(II)	1800 Pa	1800 Pa	100-600
DE15M(II) DE15H(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

Option 5 Long 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 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>

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

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range (A)
DE15M(II) DE15H(II)	1200 Pa	1200 Pa	100-200 or 500-600
DE15M(II) DE15H(II)	1800 Pa	1800 Pa	200-500
DE15V(II) DEG15VC.20(II)	1000 Pa	800 Pa	100-200 or 500-600
DE15V(II) DEG15VC.20(II)	1200 Pa	1200 Pa	200-500
DD06M.05(II) DE06X.05(II)	1800 Pa	1800 Pa	100-200 or 500-600
DD06M.05(II) DE06X.05(II)	2000 Pa	2000 Pa	200-500

Option 6 Short side 4 points clamping with crossbeam

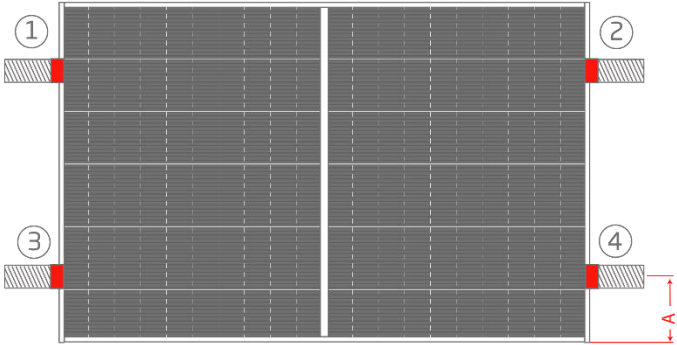
Graphic view	Description
	<p>Clamp position can be within the range xxx – xxx mm (clamping range refers to Table 6) for all 4 clamps attached to the module long side; the clamps 1 & 2 can have a different distance to the edge than the clamps 3 & 4 (asymmetrical clamping).</p>

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

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range (A)
DE15M(II) DE15H(II)	1600 Pa	1000 Pa	150-250
DE15V(II)	1200 Pa	800 Pa	150-250
DEG15VC.20(II)	1300 Pa	1000 Pa	150-250
DD06M.05(II) DE06X.05(II)	1800 Pa	1800 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>

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

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range	
			A	B
DE15M(II) DE15H(II)	3000 Pa	2400 Pa	0-200	0-200
DE15V(II) DEG15VC.20(II)	2100 Pa	1500 Pa	0-200	0-200
DD06M.05(II) DE06X.05(II)	3600 Pa	2400 Pa	0-200	0-200

NOTE:

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

- 1800 Pa for DE15M(II) / DE15H(II)
- 800 Pa for DE15V(II) / DEG15VC.20(II)
- 1800 Pa for DE06X.05(II) / DD06M.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

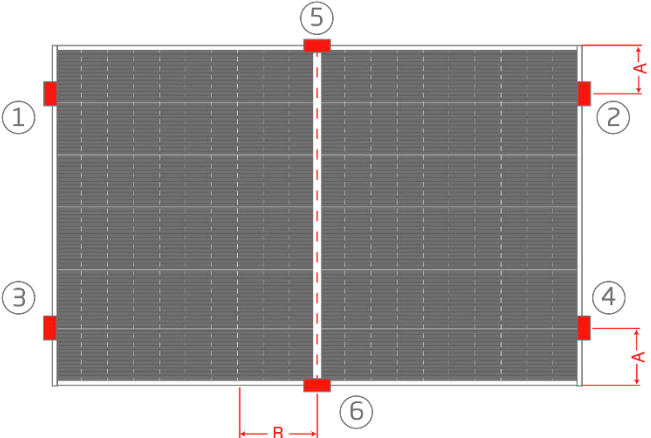
Graphic view	Description
	<p>Clamp position can be within the range 0 – xxx mm (clamping range refers to Table 8) for all 4 clamps attached to the module short side, clamping range can be asymmetrical, clamp 1 & 2 can have a different position from the module edge compared to clamp 3 & 4; the support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

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

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range	
			A	B
DE15M(II) DE15H(II)	3000 Pa	2400 Pa	0-200	0-200
DE15V(II) DEG15VC.20(II)	2100 Pa	1500 Pa	0-200	0-200
DD06M.05(II) DE06X.05(II)	3600 Pa	2400 Pa	0-200	0-200

NOTE:

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

- 1800 Pa for DE15M(II) / DE15H(II)
- 800 Pa for DE15V(II) / DEG15VC.20(II)
- 1800 Pa for DD06M.05(II) / DE06X.05(II)

Option 9 Eight long side clamps (1-8) and only punctual support underneath module frame

Graphic view	Description
<p>The diagram shows a rectangular solar module with a grid of cells. Eight red clamps are attached to the long sides. Clamps 1, 2, 3, and 4 are on the top edge, and clamps 5, 6, 7, and 8 are on the bottom edge. Dimension 'A' is the distance from the edge to clamps 1, 4, 5, and 8. Dimension 'B' is the distance between clamps 2 and 3 on the top, and between clamps 6 and 7 on the bottom. A vertical dashed line is shown between clamps 3 and 6.</p>	<p>Clamp position can be within the range 0 – xxx mm (clamping range refers to Table 9) for all 8 clamps attached to the module long side, clamping range can be asymmetrical, clamp 1 & 5 can have a different position form the module edge compared to clamp 4 & 8; the support points 2, 3, 6, and 7 use with clamps.</p>

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

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range	
			A	B
DE15M(II) DE15H(II)	3000 Pa	2400 Pa	0-200	250-350
DE15V(II) DEG15VC.20(II)	2100 Pa	1500 Pa	0-200	250-350
DD06M.05(II) DE06X.05(II)	3600 Pa	2400 Pa	0-200	200-300

Option 10 Hybrid clamping with clamps on long and short side and solid rails supporting from underneath

Graphic view

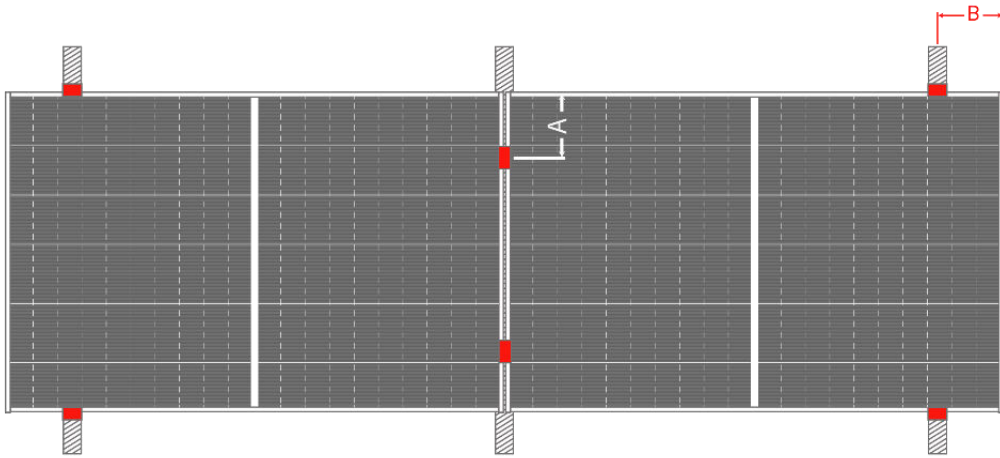


Table 10: Maximum mechanical test loads and clamping ranges for option 10.

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range	
			A	B
DE15M(II) DE15H(II)	1600 Pa	1000 Pa	100-250	250-450
DE15V(II) DEG15VC.20(II)	1200 Pa	800 Pa	100-250	250-450

Option 11 Four hooks/clamps which are clamping the module flange from underneath on the long side of the module

Graphic view	Description
<p>The graphic shows a top-down view of a solar module with a grid of cells. Four red and white striped hooks/clamps are positioned at the corners of the module's long side. They are labeled 1 (top-left), 2 (top-right), 3 (bottom-left), and 4 (bottom-right). A dimension line labeled 'A' indicates the distance from the right edge of the module to hook 2.</p>	<p>Four hooks/clamps underneath the module are clamping the flange of the long side frame, the module frame is punctually supported from underneath.</p> <p>The hook/clamp position can be within the 0 – xxx mm (clamping range refers to Table 11) for all 4 hooks/clamps attached to the module. The hooks/clamps 1 & 3 can have a different distance to the edge than the hooks/clamps 2 & 4 (asymmetrical clamping).</p>

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

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range (A)
DE08M(II) DE08M.08(II) DD08M.08(II)	1600 Pa	1600 Pa	100-600
DE09 DE09.08 DE09.05	2200 Pa	1600 Pa	100-500
DEG8MC.20(II)	1600 Pa	1600 Pa	100-600
DE15M(II) DE15H(II)	1600 Pa	1400 Pa	200-600
DE15V(II) DEG15VC.20(II)	1000 Pa	800 Pa	200-600
DE17M(II) DEG17MC.20(II)	1600 Pa	1400 Pa	200-600
DE18M(II) DEG18MC.20(II)	1500 Pa	1200Pa	200-600
DD06M.05(II) DE06X.05(II)	1600 Pa	1600 Pa	100-600

Option 12 Six hooks/clamps which are clamping the module flange from underneath on the long side of the module

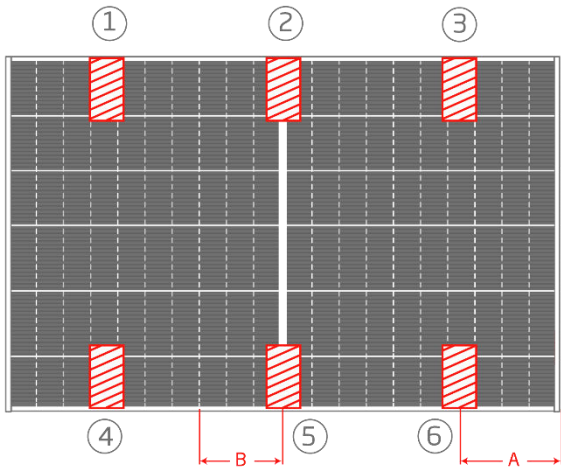
Graphic view	Description
	<p>Four hooks/clamps underneath the module are clamping the flange of the long side frame, the module frame is punctually supported from underneath.</p> <p>The hook/clamp position can be within the 0 – xxx mm (clamping range refers to Table 12) for all 6 hooks/clamps attached to the module. The hooks/clamps 1 & 4 can have a different distance to the edge than the hooks/clamps 3 & 6 (asymmetrical clamping).</p>

Table 12: Maximum mechanical test loads and clamping ranges for option 12.

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range	
			A	B
DE08M(II) DE08M.08(II) DD08M.08(II)	3400 Pa	1800 Pa	0-200	0-200
DE09 DE09.08 DE09.05	3400 Pa	1800 Pa	0-200	0-200
DE15M(II) DE15H(II)	2800 Pa	1500 Pa	0-200	0-200
DE15V(II) DEG15VC.20(II)	1900 Pa	1100 Pa	0-200	0-200
DE17M(II)	2800 Pa	1500 Pa	0-200	0-200
DEG17MC.20(II)	3000 Pa	1500 Pa	0-200	0-200
DE18M(II)	2200 Pa	1400 Pa	0-200	0-200
DD06M.05(II) DE06X.05(II)	3400 Pa	1800 Pa	0-200	0-200

Option 13 Four hooks/clamps which are clamping the module flange from underneath on the short side of the module

Graphic view	Description
	<p>Four hooks/clamps underneath the module are clamping the flange of the short side frame, the module frame is punctually supported from underneath.</p> <p>The hook/clamp position can be within the 0 – xxx mm (clamping range refers to Table 13) for all 4 hooks/clamps attached to the module. The hooks/clamps 1 & 2 can have a different distance to the edge than the hooks/clamps 3 & 4 (asymmetrical clamping).</p>

Table 13: Maximum mechanical test loads and clamping ranges for option 13.

Product type	Max mechanical load (Front side +)	Max mechanical load (Back side -)	Clamping range (A)
DE08M(II) DE08M.08(II) DD08M.08(II)	1600 Pa	1400 Pa	0-200
DEG8MC.20(II)	1400 Pa	1200 Pa	0-200
DE15M(II) DE15H(II)	1400 Pa	800 Pa	0-200
DE15V(II)	1000 Pa	800 Pa	0-200
DEG15VC.20(II)	1100 Pa	800 Pa	0-200
DE17M(II) DEG17MC.20(II)	1400 Pa	800 Pa	0-200
DE18M(II) DEG18MC.20(II)	1100 Pa	800 Pa	0-200
DD06M.05(II) DE06X.05(II)	1600 Pa	1400 Pa	0-200

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