



# **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 installation and the relevant exemption clauses.

Contents of this document are subject to change without notice.

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## 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  $\geq 4$  mm;
- Clamp B: 50 mm (1.97 inch) length Clamp with thickness  $\geq 4$  mm (0.16 inch );
- Clamp C: 40 mm (1.57 inch) length Clamp with thickness  $\geq 4$  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

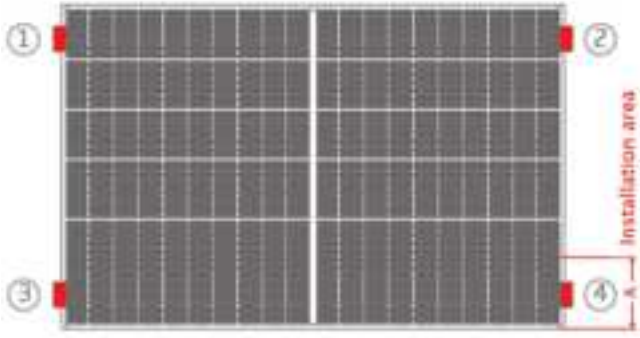
| Graphic view                                                                        | Description                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>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&amp;2 can have a different position from the module edge compared to clamp 3 &amp; 4.</p> |
| Legend                                                                              |                                                                                                                                                                                                                                                                        |
|  | <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

## Clamp A:

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

## Clamp B:

| Product Code               | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range<br>(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

## Long side clamping with 4 clamps

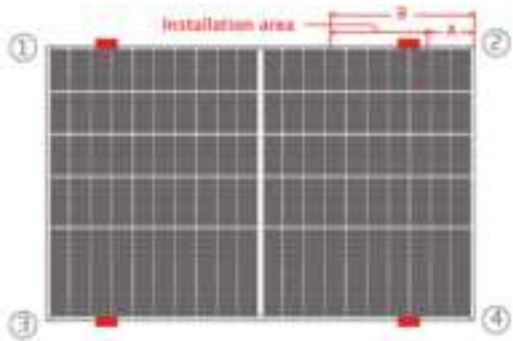
| Graphic view                                                                        | Description                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>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 &amp; 3 can have a different distance to the edge than the clamps 2 &amp; 4 (asymmetrical clamping).</p> |
| 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 Long side clamping with 4 clamps.

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<br>DE09R/DE09R.05/DE09R.08 | +2400/-2000 Pa                                | +3600/-3000 Pa | +3000/-2400 Pa | +2400/-2000 Pa |
| NEG9R.28/NEG9R.25/ NEG9R.20/<br>NEG9RC.27/ NEG9RC.20  | +2400/-2000 Pa                                | +2400/-2000 Pa | +3000/-2400 Pa | +2400/-2000 Pa |

Clamp B:

| Product Code                                      | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range(mm) |     |
|---------------------------------------------------|-------------------------------------|------------------------------------|--------------------|-----|
|                                                   |                                     |                                    | A                  | B   |
| DE09R<br>DE09R.05<br>DE09R.08                     | +2400Pa                             | -2400Pa                            | 130                | 199 |
|                                                   | +3600Pa                             | -3000Pa                            | 200                | 330 |
|                                                   | +2400Pa                             | -2400Pa                            | 331                | 381 |
|                                                   | +2200Pa                             | -2200Pa                            | 382                | 600 |
| NEG9R.28/NEG9R.25/NEG9R.20<br>NEG9RC.27/NEG9RC.20 | +2000Pa                             | -2000Pa                            | 130                | 289 |
|                                                   | +3000Pa                             | -2400Pa                            | 290                | 370 |
|                                                   | +2000Pa                             | -2000Pa                            | 371                | 431 |
| NEG18R.28/NEG18R.20                               | +2400Pa                             | -1600Pa                            | 400                | 600 |
| DE19R                                             | +1800Pa                             | -1100Pa                            | 442                | 742 |
| DEG19RC.20<br>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                                                                                                                                                                                                                                                                                                                     |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <p>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 &amp; 3 can have a different distance to the edge than the clamps 2 &amp; 4 (asymmetrical clamping); the clamp 5 can have a different distance to the center than the clamp 6.</p> |

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<br>C = 0-200                      | A-B = 200-380<br>C = 0-200 | A-B = 380-550<br>C = 0-200 |
|                                                       | Maximum Test Load (Front side +/ Back side -) |                            |                            |
| DE09R.B0/DE09R.B5/DE09R.B8<br>DE09R/DE09R.05/DE09R.08 | +3600/-2400 Pa                                | +3000/-2400 Pa             | +2400/-2000 Pa             |
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20     | +3000/-2400 Pa                                | +3000/-2400 Pa             | +2400/-2000 Pa             |

## Clamp B:

| Product Code                                      | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(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/NEG9R.25<br>NEG9RC.27/NEG9RC.20 | +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

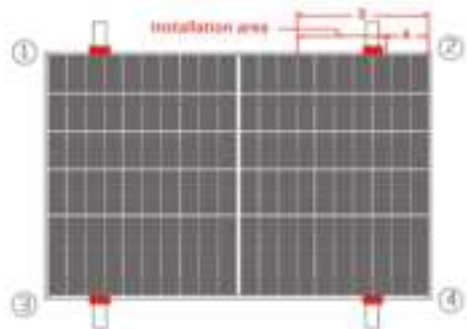
| Graphic view                                                                        | Description                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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/-3000Pa                               | +5400/-4000Pa | +6000/-4000Pa |
|              | Clamping Range(mm)                          |               |               |

|                                                       |                        |           |         |
|-------------------------------------------------------|------------------------|-----------|---------|
| DE09R.B0/DE09R.B5/DE09R.B8<br>DE09R/DE09R.05/DE09R.08 | /                      | /         | 250-330 |
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20     | A=100-300<br>A=350-600 | A=300-350 | /       |

#### Clamp B:

| Product Code                                      | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range(mm) |     |
|---------------------------------------------------|-------------------------------------|------------------------------------|--------------------|-----|
|                                                   |                                     |                                    | A                  | B   |
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20 | +5400Pa                             | -4000Pa                            | 270                | 370 |
| DEG19RC.20 / NEG19RC.20                           | +5400Pa                             | -2400Pa                            | 440                | 540 |
| DE09R<br>DE09R.05<br>DE09R.08                     | +3200Pa                             | -2400Pa                            | 200                | 249 |
|                                                   | +6000Pa                             | -4000Pa                            | 250                | 330 |
|                                                   | +3000Pa                             | -2400Pa                            | 331                | 600 |
| NEG18R.28/NEG18R.20                               | +3000Pa                             | -2400Pa                            | 200                | 305 |
|                                                   | +5400Pa                             | -1800Pa                            | 405                | 500 |
| 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<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range(mm) |     |
|---------------------------------------------------|-------------------------------------|------------------------------------|--------------------|-----|
|                                                   |                                     |                                    | A                  | B   |
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20 | +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

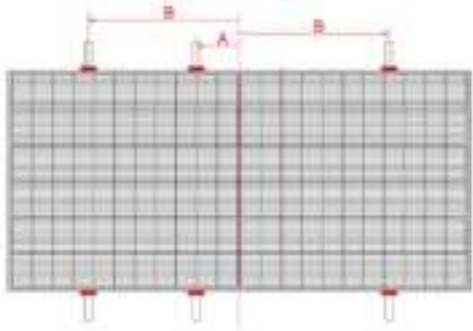
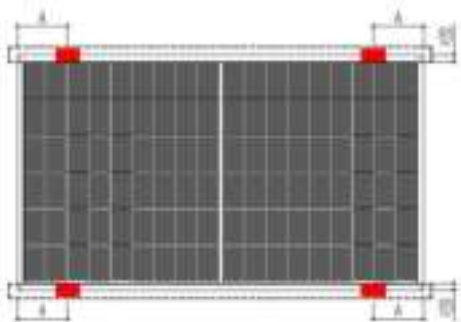
| Graphic view                                                                      | Description                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Positions of 3 crossbeams, 6 screws and 6 clamps (check <b>Structure</b> 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.</p> <p><i>Note: The position of A could be left or right to the module center line.</i></p> |
| 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<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping Position<br>(mm) |     |
|--------------------------|---------------------------------------|-------------------------------------|------------------------------------|---------------------------|-----|
|                          |                                       |                                     |                                    | A                         | B   |
| NEG19RC.20<br>DEG19RC.20 | 3 crossbeams + 6<br>screws + 6 clamps | +5400Pa                             | -4000Pa                            | 200                       | 700 |
| DE18M(II)                | 3 crossbeams + 6<br>screws + 6 clamps | +5400Pa                             | -3600Pa                            | 200                       | 700 |
| DEG21C.20<br>NEG21C.20   | 3 crossbeams + 6<br>screws + 6 clamps | +5400Pa                             | -3600Pa                            | 200                       | 700 |
| DE21                     | 3 crossbeams + 6<br>screws + 6 clamps | +5400Pa                             | -3300Pa                            | 200                       | 700 |
| DEG21C.20<br>NEG21C.20   | 3 crossbeams + 6<br>screws + 0 clamps | +5400Pa                             | -2800Pa                            | 200                       | 700 |

## Option 4: Long side clamping with shared rail underneath

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



### 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 B:

| Product Code        | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range<br>(A) |
|---------------------|-------------------------------------|------------------------------------|-----------------------|
| NEG18R.28/NEG18R.20 | +3000Pa                             | -2400Pa                            | 305-450               |

### Option 5: Clamping on short side with crossbeam

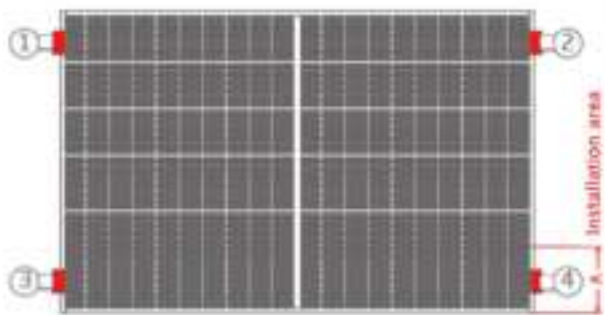
| Graphic view                                                                        | Description                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | <p>Clamp position can be within the range 0 – xxx mm (clamping range refers to Table 7) for all 4 clamps attached to the module short side, clamping range can be asymmetrical, clamp 1&amp;2 can have a different position from the module edge compared to clamp 3 &amp; 4.</p> <p>The crossbeam underneath shall avoid the position of junction box.</p> |
| 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<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range (A) |
|-------------------------------------------------------|-------------------------------------|------------------------------------|--------------------|
| DE09R.B0/DE09R.B5/DE09R.B8<br>DE09R/DE09R.05/DE09R.08 | +2400Pa                             | -2400Pa                            | 0-100              |
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20     | +2800Pa                             | -2400Pa                            | 0-100              |

#### Clamp B:

| Product Code        | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range (A) |
|---------------------|-------------------------------------|------------------------------------|--------------------|
| NEG18R.28/NEG18R.20 | +2400Pa                             | -1000Pa                            | 50-100             |
|                     | +2400Pa                             | -800Pa                             | 100-250            |

## Clamp C:

| Product Code                                      | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range (A) |
|---------------------------------------------------|-------------------------------------|------------------------------------|--------------------|
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20 | +2800Pa                             | -1600Pa                            | 0-100mm            |
| DEG19RC.20/NEG19RC.20                             | +2400Pa                             | -700Pa                             | 0-100mm            |

## Option 6: Clamping on the short side with shared rail underneath

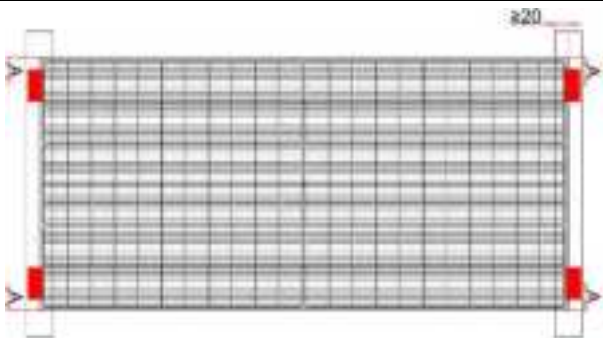
| Graphic view                                                                        | Description                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>Use 4 clamps on the short side.</p> <p>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</p> <p>clamping range refers to Table 8</p> |
| 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<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range (A) |
|-------------------------------------------------------|-------------------------------------|------------------------------------|--------------------|
| DE09R.B0/DE09R.B5/DE09R.B8<br>DE09R/DE09R.05/DE09R.08 | +2400Pa                             | -1800Pa                            | A=0-200            |
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20     | +2400Pa                             | -1800Pa                            | A=0-200            |

## Option 7: Clamping on short side and long side with rail perpendicular to long side

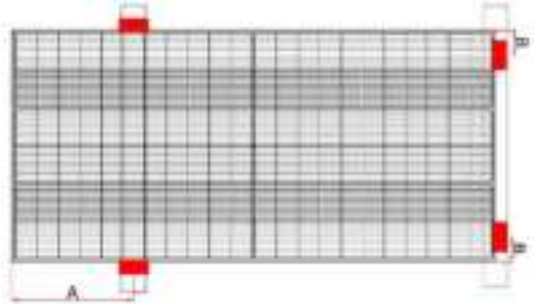
| Graphic view                                                                        | Description                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Use 2 clamps on the short side and 2 clamps on the long side.</p> <p>Mounting rails run perpendicular to the long side frame</p> <p>clamping range refers to Table 9</p> |
| Legend                                                                              |                                                                                                                                                                             |
|  | 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 7.

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

### Option 8: Slide-in/insertion installation method

This methods can vary and depend on the mounting structures. The installer needs to follow the mounting guidelines recommended by the mounting system supplier. Each module must be securely maintained through all its length on two opposite sides.

1. The module frame shall be fully inserted into the slide rail, with no relative displacement or sliding between the slide rail and module upon installation, and the adequate strength of slide rail must be ensured.
2. Damage to the module frame profile shall be avoided during the installation of the slide rail.
3. The upper edge of slide rail shall be overlapped with A-side of the module frame by at least 10 mm.
4. The lower edge of slide rail shall have minimum length of 24mm.
5. The inner height of the slide rail shall match the module frame height under any circumstance.

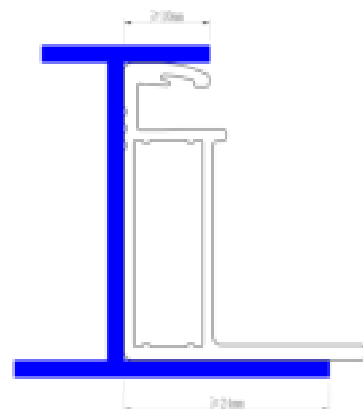


Figure 3. slide-in mounting concept and required dimensions

#### Long side slide-in

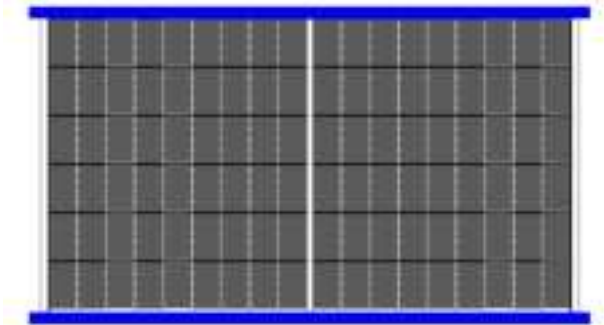
| Graphic view                                                                        | Description                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <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> <p>Module long sides are inserted into slide-in rails completely.</p> <p>Test loads refer to Table 10</p> |

Table 10: Maximum mechanical test loads for Option 8

| Product Code        | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) |
|---------------------|-------------------------------------|------------------------------------|
| NEG18R.20/NEG18R.28 | +3000Pa                             | -2400Pa                            |

### Option 9: Long side clamping on Japan Typical shell roof

- The following installation conditions and loads are only applied to typical shell roof in Japan. The pitch distance is 500mm as shown in figure 4.
- All clamps used to install module shall be fixed to the seam of shell roof directly or through a clamp supporter;
- The tolerance of all clamp position in this mounting option is  $\pm 50\text{mm}$

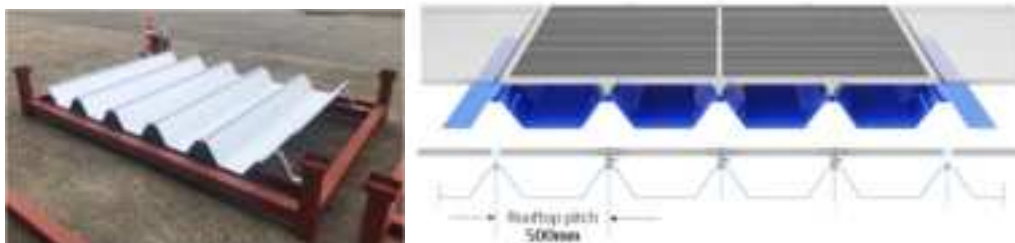


Figure 4: Typical Shell roof of Japan installation

#### (1) Long side clamping with 4 clamps

| Graphic view | Description                                                                                                                          |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------|
|              | <p>Clamp position can be within the range (clamping range refers to Table 11) for all 4 clamps attached to the module long side.</p> |

Table 11: Maximum mechanical test loads for Option 9 with 4 clamps

#### Clamp B:

| Product Code                                      | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range(mm) |     |
|---------------------------------------------------|-------------------------------------|------------------------------------|--------------------|-----|
|                                                   |                                     |                                    | A                  | B   |
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20 | +5400Pa                             | -2400Pa                            | 131                | 131 |
| NEG18R.28/NEG18R.20                               | +4500Pa                             | -2000Pa                            | 231                | 231 |
| NE19R                                             | +5400Pa                             | -2400Pa                            | 441                | 441 |
| NEG19RC.20                                        | +5400Pa                             | -2000Pa                            | 441                | 441 |

## (2) Long side clamping with 6 clamps

| Graphic view | Description                                                                                                                          |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------|
|              | <p>Clamp position can be within the range (clamping range refers to Table 12) for all 6 clamps attached to the module long side.</p> |

Table 12: Maximum mechanical test loads for Option 9 with 6 clamps

### Clamp B:

| Product Code                                      | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range(mm) |     |     |
|---------------------------------------------------|-------------------------------------|------------------------------------|--------------------|-----|-----|
|                                                   |                                     |                                    | A                  | B   | C   |
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20 | +6000Pa                             | -2800Pa                            | 131                | 131 | 250 |
| NEG18R.28/NEG18R.20                               | +4500Pa                             | -2400Pa                            | 231                | 231 | 250 |
| NE19R                                             | +6000Pa                             | -2800Pa                            | 441                | 441 | 250 |
| NEG19RC.20                                        | +6000Pa                             | -2800Pa                            | 441                | 441 | 250 |

## (3) Long side clamping with 8 clamps

| Graphic view | Description                                                                                                                          |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------|
|              | <p>Clamp position can be within the range (clamping range refers to Table 13) for all 8 clamps attached to the module long side.</p> |

Table 13: Maximum mechanical test loads for Option 9 with 8 clamps

### Clamp B:

| Product Code                                      | Maximum Test Load<br>(Front side +) | Maximum Test Load<br>(Back side -) | Clamping range(mm) |     |     |
|---------------------------------------------------|-------------------------------------|------------------------------------|--------------------|-----|-----|
|                                                   |                                     |                                    | A                  | B   | C   |
| NEG9R.28/NEG9R.20/NEG9R.25<br>NEG9RC.27/NEG9RC.20 | +6400Pa                             | -3200Pa                            | 131                | 131 | 250 |
| NEG18R.28/NEG18R.20                               | +6400Pa                             | -2800Pa                            | 231                | 231 | 250 |
| NE19R                                             | +6400Pa                             | -3200Pa                            | 441                | 441 | 250 |
| NEG19RC.20                                        | +5400Pa                             | -3200Pa                            | 441                | 441 | 250 |



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The Right Of Final Interpretation Belongs To Trina Solar