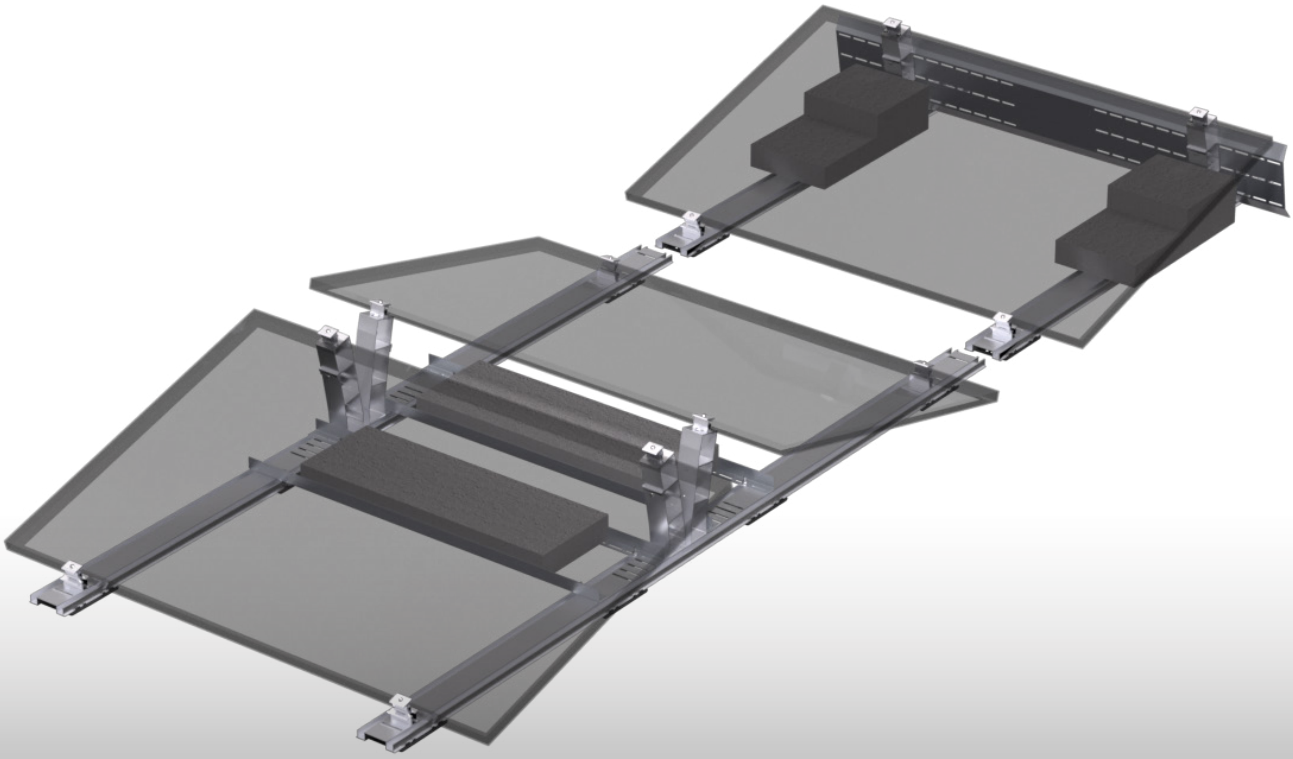
PV-ezRACK®

# Ascent 1.1

## Code-Compliant Planning and Installation Guide
## Complying with Eurocodes 0-9 and VDI 6012



SOLAR ROOF

Last Updated - Apr. 2024

# Introduction

The Clenergy PVezRack® Ascent 1.1 is a low ballast, south/north, east-west facing solution without rails for PV installation on flat roofs. With the special design and a tilt angle of 10° and 15°, Ascent 1.1 is suitable for pv module clamping from both long side and short side.

Please review this manual thoroughly before installing PVezRack® Ascent 1.1. This manual provides:
1) Supporting documentation for building permit applications relating to PVezRack® Ascent 1.1 PV Module Mounting System,
2) Planning and installation instructions.

## List of contents



Structural integrity of the PV-ezRack Ascent 1.1 parts will be compliant with the Eurocodes and VDI 6012 standards when installed correctly. Make sure to comply with the relevant Occupational Health and Safety regulations when carrying any installation. Also, make sure to comply with other relevant State or Federal regulations.

Always check you are using the latest version of this Installation manual. To do that, contact your local distributor or contact Clenergy via the following email: tech.euuk@clenergy.com otherwise.

## The installer is solely responsible for:

- Complying with all applicable local or national building codes, including any that may supersede this manual;
- Ensuring that PVezRack® and other products are appropriate for the particular installation and the installation environment;
- Using only PVezRack® parts and installer-supplied parts as specified by the PVezRack® project plan. (substitution of parts may void the warranty and invalidate the letter of certification);
- Recycling: Recycle according to the local relative statute.
- Removal: Reverse installation process.
- Ensure that there are no less than two professionals working on panel installation.
- Ensure the installation of related electrical equipment is performed by qualified personnel.
- Ensuring safe installation of all electrical aspects of the PV array.
- Ensuring that the roof, its rafters/purlins, connections, and other structural support members can support the array under building live load conditions;
- Ensuring that screws to fix interfaces have adequate pull-out strength and shear capacities as installed;
- Maintaining the waterproof integrity of the roof, including selection of appropriate flashing;

## Application

Roof pitch: maximum 5°.
Maximum solar panel dimensions: length 2350mm, width 1134mm, height 28-40mm.
Array set up: maximum length 23m, maximum width 20m, please also keep at lease 20mm gap between arrays.

## Design Standards:

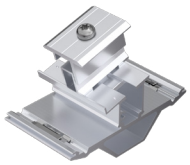
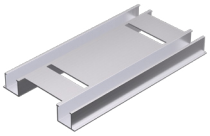
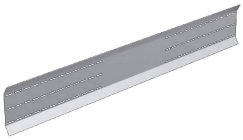
- BS EN 1990:2002 Basis of Structural Design
- DIN EN 1991-1-4 Eurocode 1: Actions on structures - Part 1-4: General actions - Wind actions
- DIN EN 1991-1-3 Eurocode 1: Actions on structures - Part 1-3: General actions - Snow loads
- VDI 6012 Blatt 1.4  Integration of decentralised and regenerative energy systems in building

# Tools and Components

## Tools

| | | | | |
|---|---|---|---|---|
|  Screw Driver |  Drive Bit |  Torque Spanner |  Tape |  String & Marker Pen |

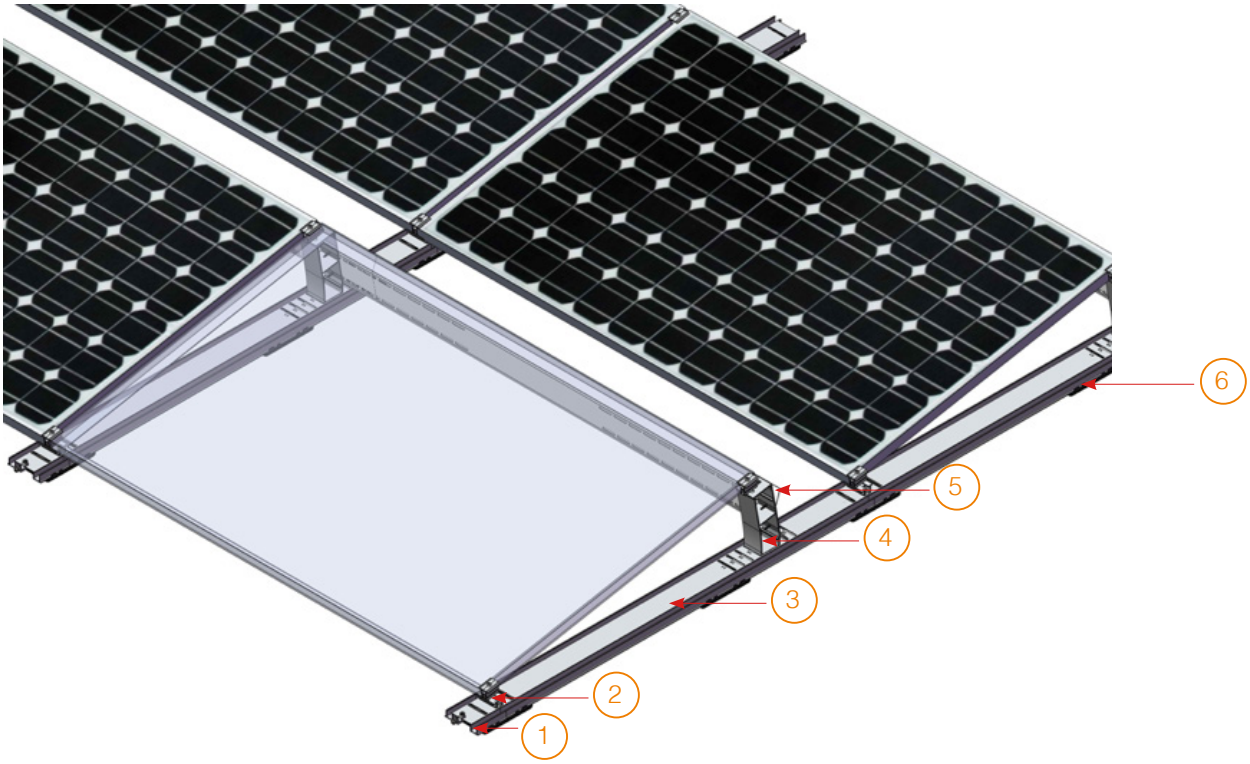
## Components

| | | | | |
|---|---|---|---|---|
|  FL-ACV11/G/10<br>FL-ACV11/G/15<br>Front Leg 10°/15° |  RL-ACV11/G/10<br>Rear Leg 10° |  RL-ACV11/G/15<br>Rear Leg 15° |  SEB-ACV11/120<br>Start and End Base L120 |  CB-ACV11/EW/250<br>Connection Base |
|  MB-ACV11/EW/XXXX<br>Main Base, East-west |  MB-ACV11/SN/XXXX<br>Main Base, North/south |  WD-ACV11/10/XXXXM<br>Wind Deflector |  BB-ACV11/XXXXM<br>Ballast Bar |  EZ-PM-AC<br>Protection Mat |
|  EZ-GL-U/12<br>Rialto Grounding Lug, with 12mm U-opening | | | | |

# System Overview

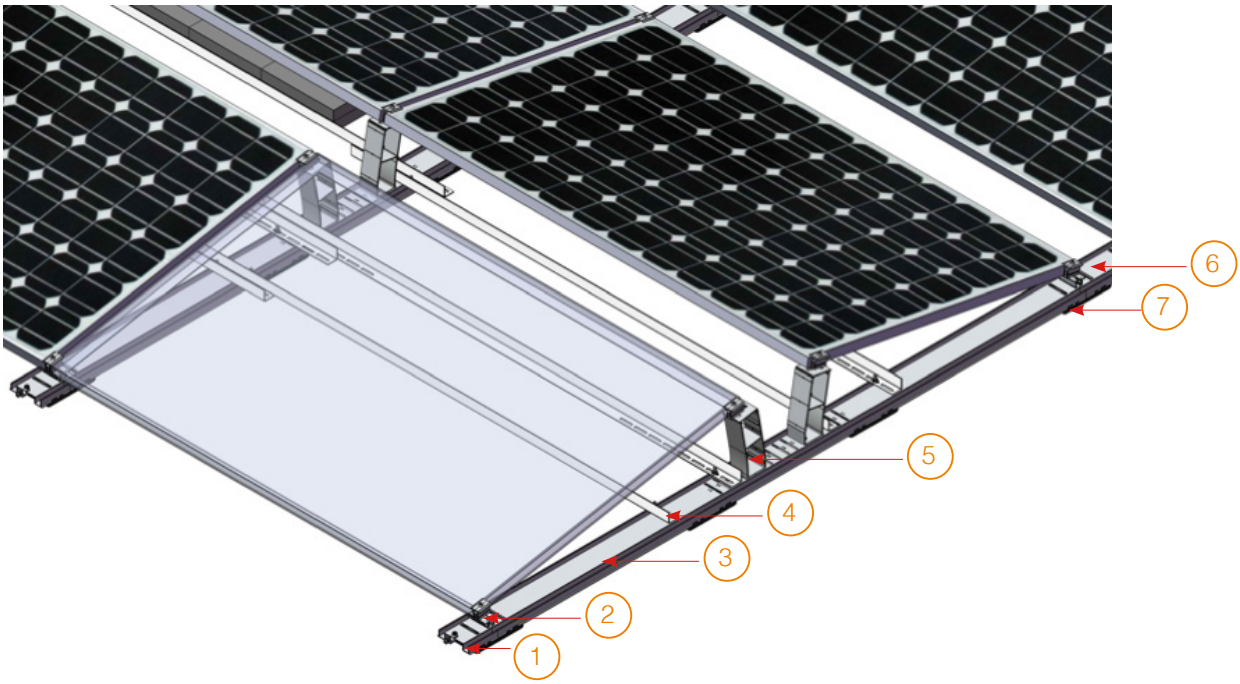
## Overview of PVezRack Ascent 1.1 short side clamping (take 10° as an example)

- North/South Facing




① Start and End Base L120 ② Front Leg 10° ③ Main Base, north/south ④ Rear Leg 10° ⑤ Wind Deflector
⑥ Protection Mat

## - East-west Facing




① Start and End Base L120 ② Front Leg 10° ③ Main Base, East-westh ④ Ballast Bar ⑤ Rear Leg 10°
⑥ Connection Base ⑦ Protection Mat

# Installation Instruction

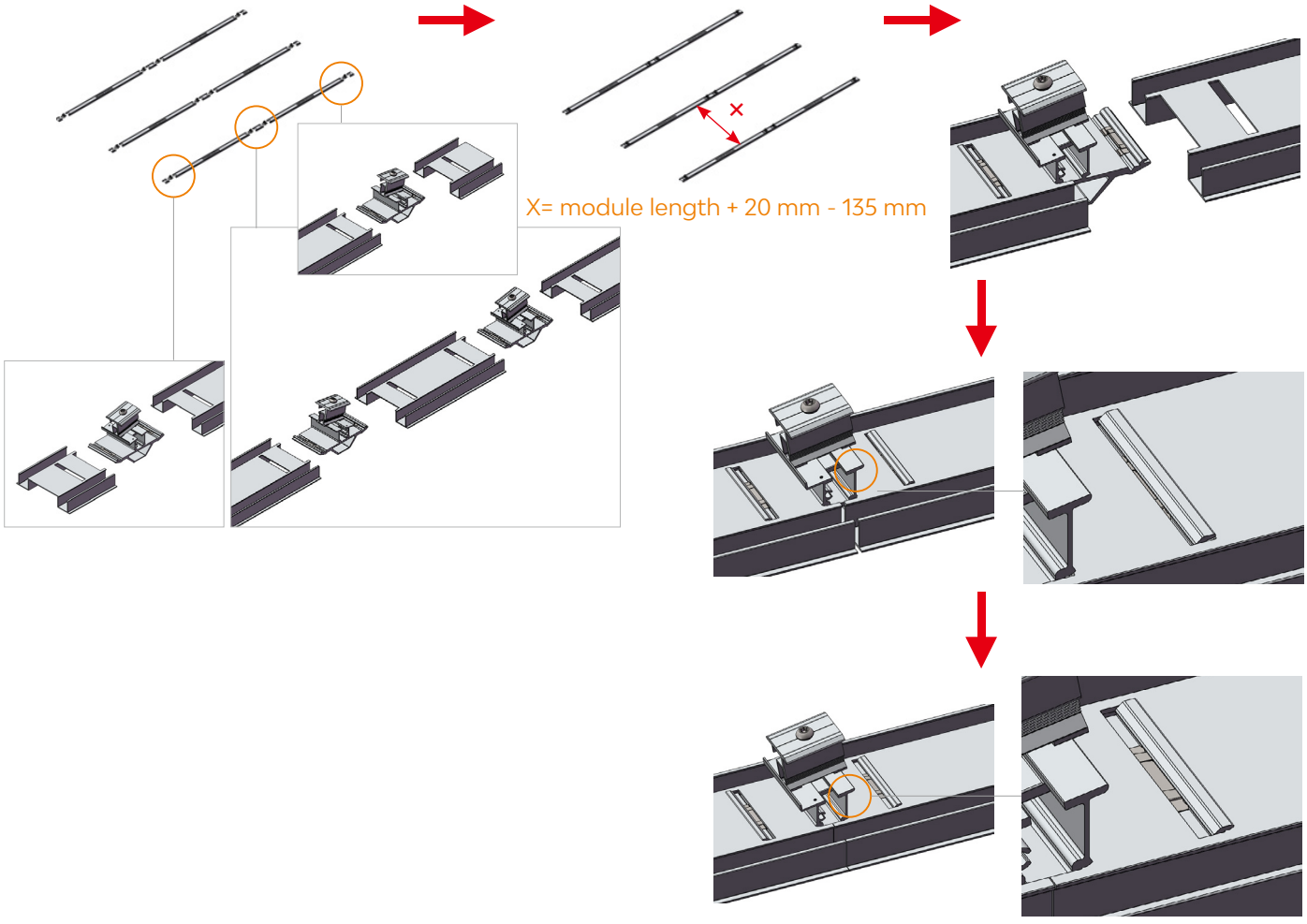
## Take East-west facing solution as an example.

### Base Installation

Mark system start point of the Base and lay out the Start and End Base, Front Leg, Main Base according to the planning documents.
Please lay out all components from East to West direction.

The sequence is the same in each row and always ends with Start and End Base.

Connect the Base with the Front Leg using the method shown in the right figures.
Place the Base to roof after installation is done.

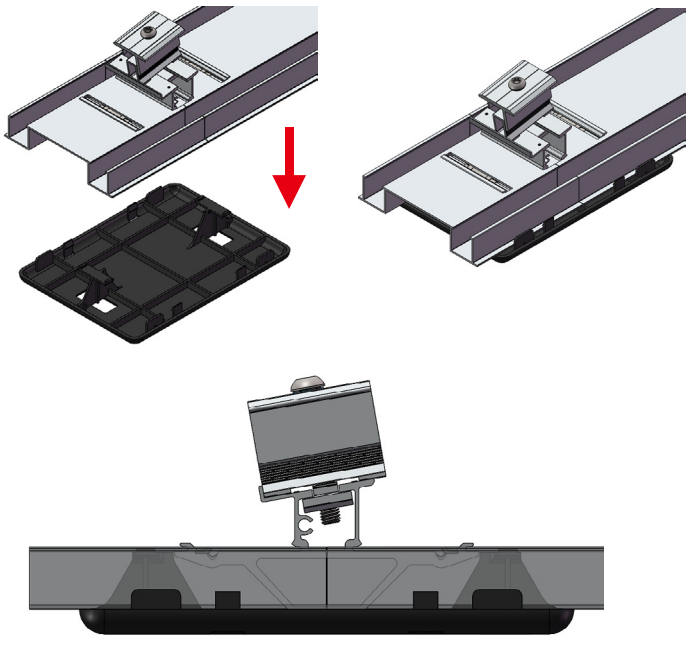


## Protection Mat Installation

Install Protection Mat under Base where Front Leg and Rear Leg are installed.

## Protection Mat under Front Leg

Press the Base down to securely fit into Protection Mat shown in the right figures.

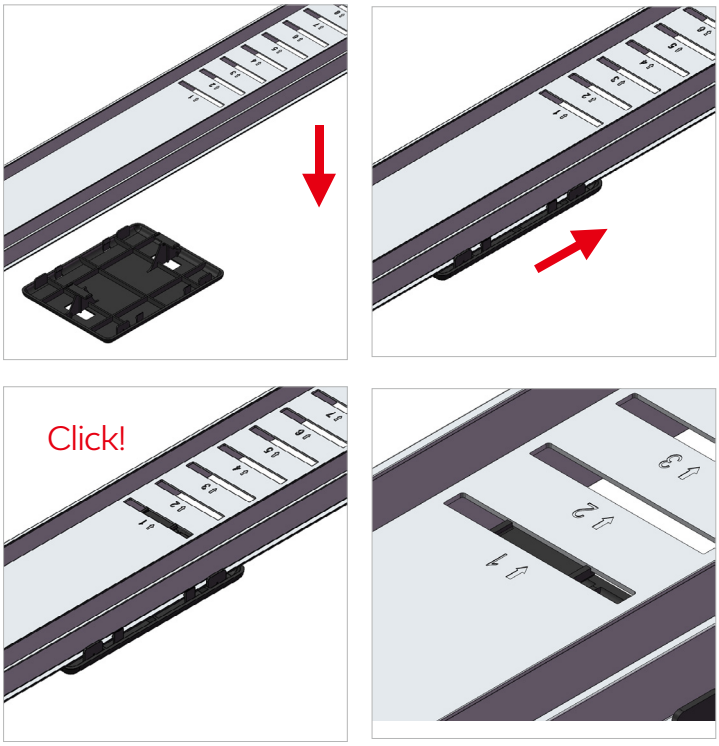


## Protection Mat under Rear Leg

Press the Base down to securely fit into Protection Mat.
Slide Protection Mat to fit into the hole in the base until you hear a clicking sound.

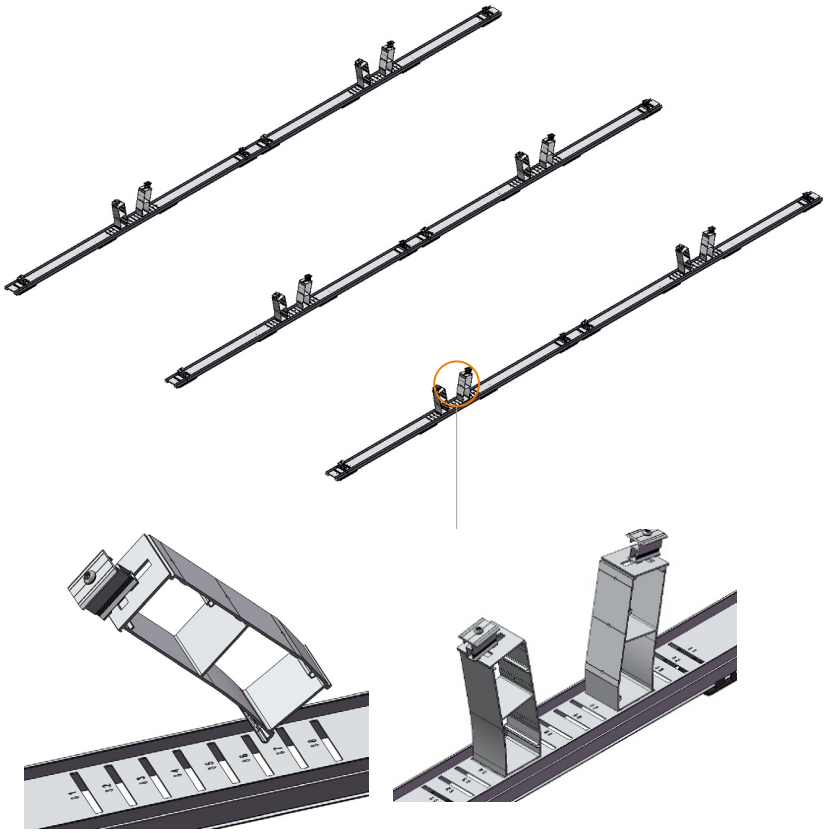
**Notes:**

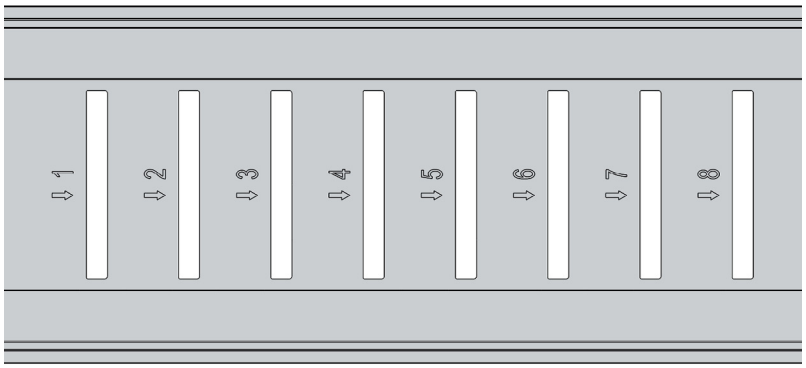
Normally the Protection Mat should be installed into hole 1.
If the module width is between 1018mm-1052mm, the Protection Mat should be installed into hole 2.



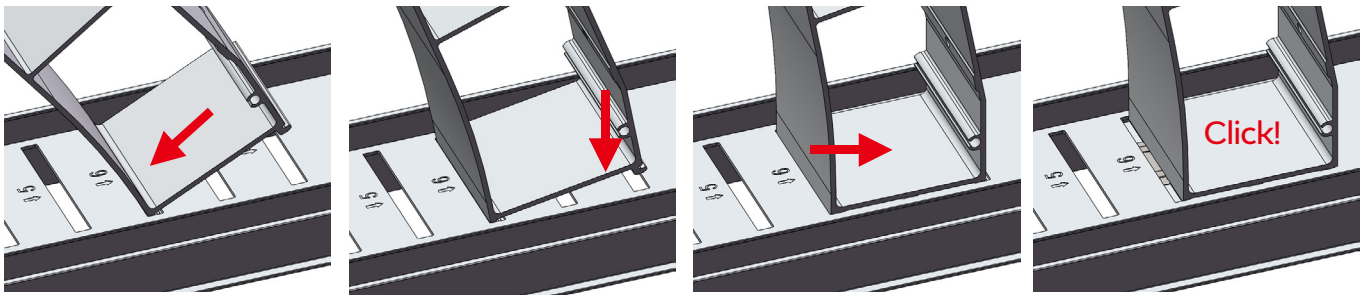

## Rear Leg Installation

Install the Rear Leg to the Base using the method shown in the right figures.






Mounting hole 1 For Panel width: 1018-1052mm
Mounting hole 2 For Panel width: 1052-1086mm
Mounting hole 3 For Panel width: 1086-1120mm
Mounting hole 4 For Panel width: 1120-1155mm
Mounting hole 5 For Panel width: 1155-1190mm




## Ballast Placement

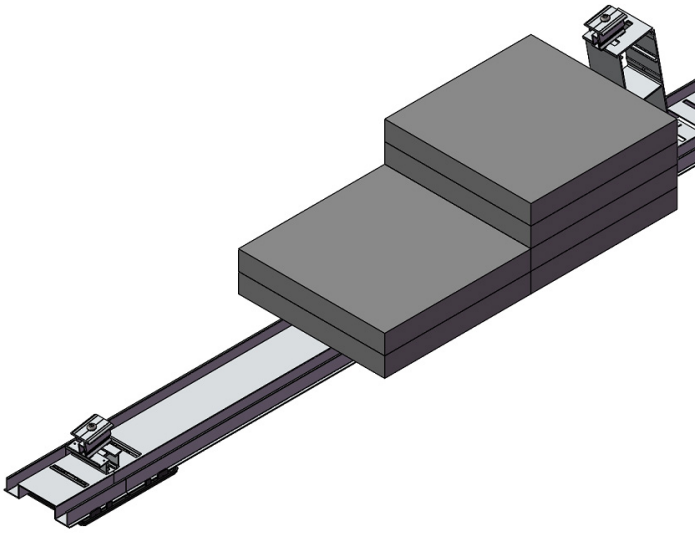
There are two different ways to place ballast blocks.

Opinion 1: On Base

Place the ballast blocks centrally on the Base.

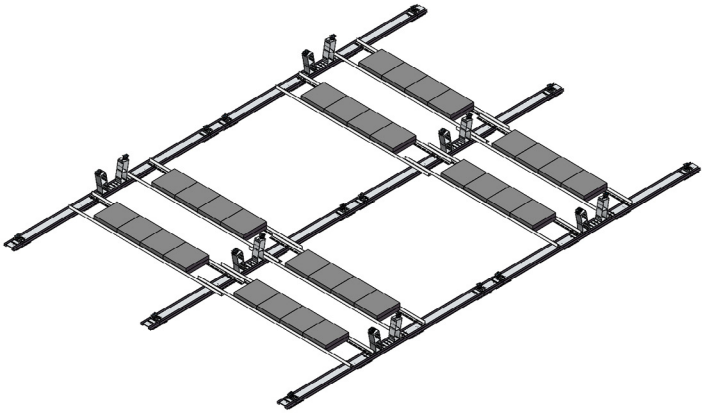
Note:

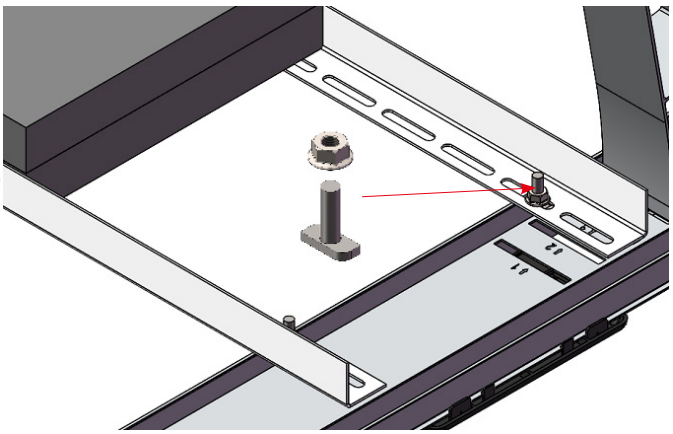
please place the ballast blocks under the modules first if the space is enough.



## Opinion 2: On Ballast Bar

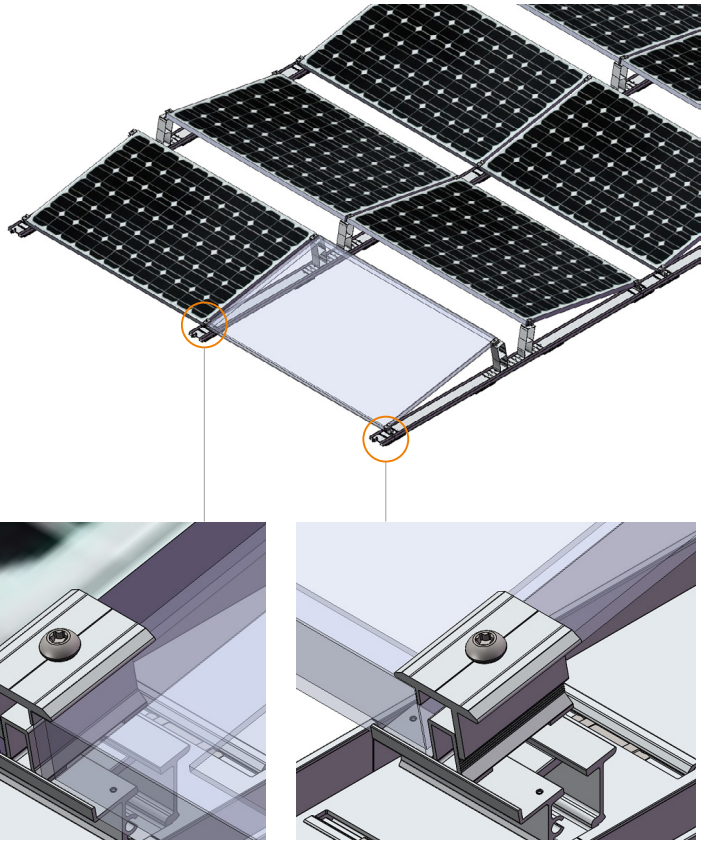
Place the ballast blocks centrally on  Ballast Bar and fasten with 4 sets of T-head bolt and nut with a torque of 10 N.m.





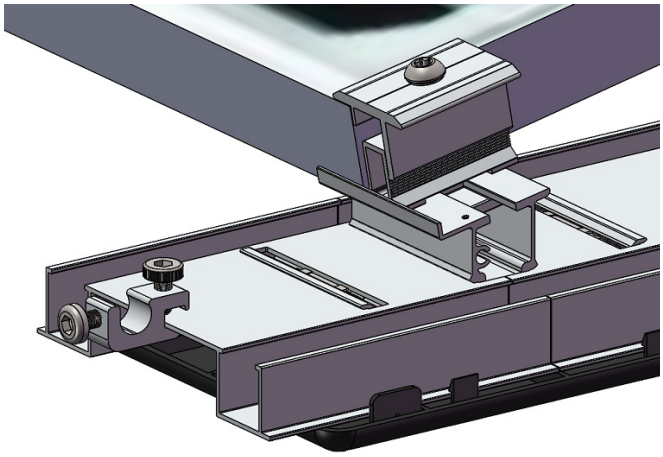
## PV Module Installation

Put the module on the Front Leg and Rear Leg. Leave an approx. 20 mm gap.
Tighten the hexagon socket screw with a torque of 14 N.m.



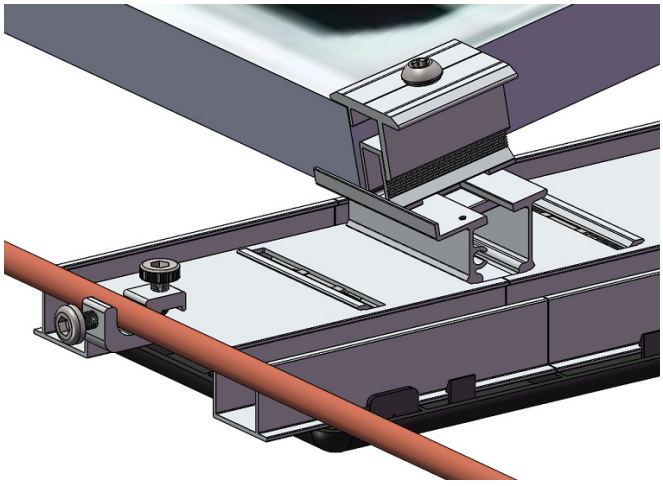
### Grounding Lug Installation

It is required to install one Grounding Lug per row of base.
The recommended torque of the bolt M6*14 is 4 N•m.
Fix the Grounding lug on the end of base. Make sure the inner face of side opening of Grounding lug is closely attach to the base as shown in right figure. Strip earthing cable if needed, insert the conductor into the Grounding lugs.
Recommended Torque is 5-6 N•m



### Note:

Please Keep the cable size between 6-12mm.



PV-ezRACK®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