SolarRoof Non-penetrative with AeriN Rail

Code-Compliant Planning and Installation Guide V 1.2

1. Introduction

AeriN Rail and Accessories constitute a system that is widely used for PV Module mounting on tin roofs. To make it robust and longevity, it is manufactured from aluminium alloy and stainless steel. With unique design, AeriN Omega Module, it provides high efficient installation and the compatibility with most of frame PV-Modules in the market.

Before system installation, please read the installation manual carefully. The manual provides the following content: (1) simple introduction of installation; (2) product installation specification;

Please use it according to the installation instruction manual. Please pay attention to safety when installing the product, and construct it according to local laws and regulations. You can confirm the latest installation manual on www.clenergy.com if necessary.

Contents

The installer is solely responsible for:

- Complying with all applicable local or national building codes, including any updates that may supersede this manual;
- Ensuring that PV-ezRack and other products are appropriate for the particular installation and the installation environment;
- Using only PV-ezRack parts and installer supplied parts as specified by PV-ezRack project plan (substitution of parts may void the warranty and invalidate the letter of certification);
- During installation, ensure that the self-tapping screws and metal screw have sufficient strength and shear force;
- Keep the roof waterproof system intact;
- Recycling: Recycle according to the local relative statute;
- Removal: Reverse installation process;
- Ensuring that there are no less than two professionals working on panel installation;
- Ensuring the installation of related electrical equipment is performed by licenced electricians;
- The upper and lower limit of the torque of the locking screws must be checked regularly at least once a year.
- Changes and deviations from the planning documents must be approved by Clenerg.

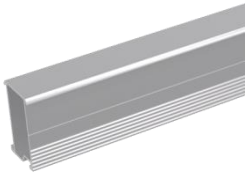
2. Tools & Components

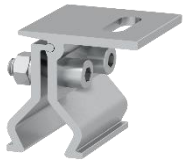
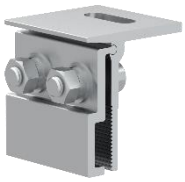
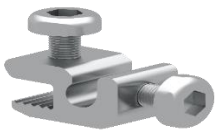
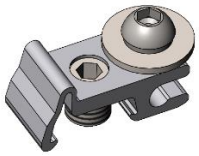
2.1 Tools

Tools		
		
Marker Pen	Screw Driver	Torque Wrench
		
Allen Key 6mm for M8 Hexagon Socket Screw	Tape	String

Note：The tools in the figure are only used for installation of rack system (not included in supply scope), please consult system installation personnel about installation of electronic parts.

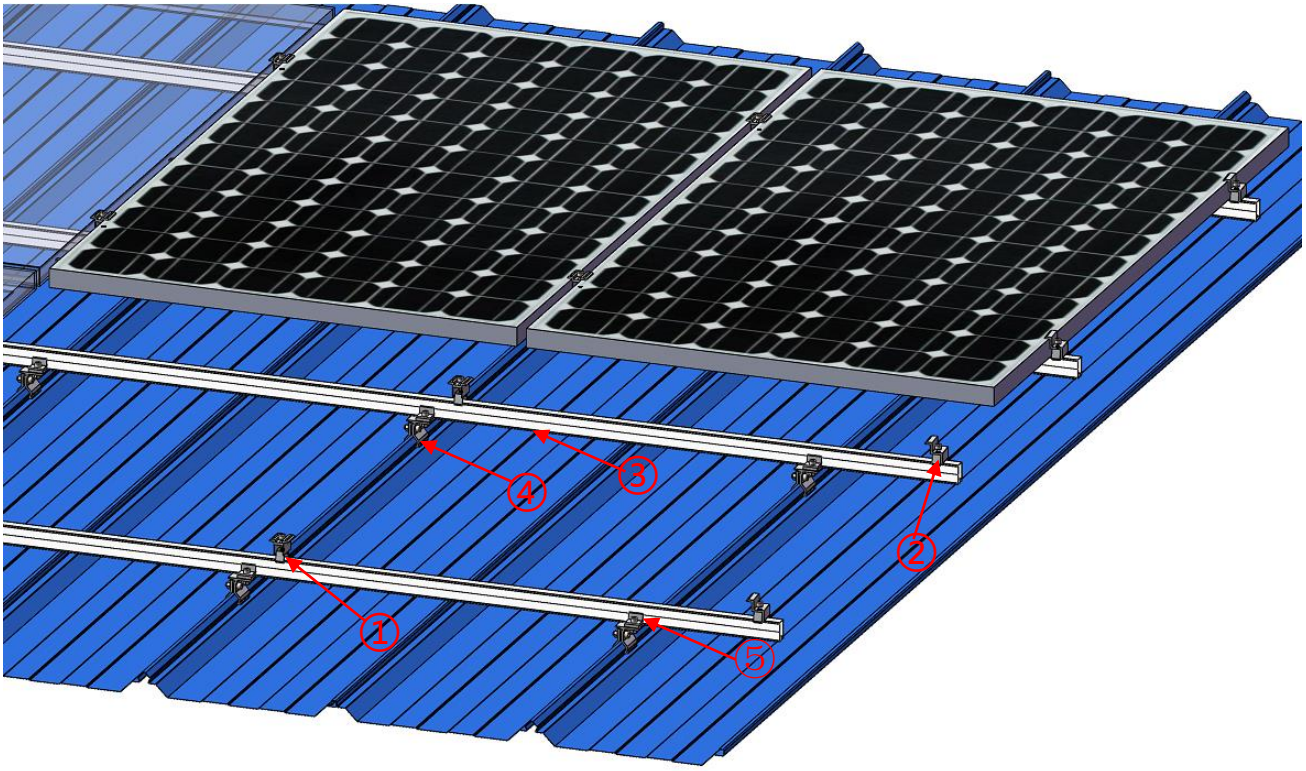
2.2 Components

Components		
		
ER-IC-AE/XX-XX Inter Clamp	**ER-EC-AE/XX** End Clamp	**ER-R-AEN/XXXX** **ER-R-AEN/50/XXXX** AeriN Rail
		
ER-SP-AEN **ER-SP-AEN/50** Splice for AeriN Rail	**ER-I-31/SH** Klip-lok Interface 400-700HS, L50*45	**ER-I-32/SH** Klip-lok Interface 406

		
ER-I-43 Klip-lok Interface for Angularity 25	**ER-I-44** Klip-lok Interface for standing seam 8	**ER-I-45** Klip-lok Interface for standing seam 20
		
ER-I-46 Klip-lok Interface for Angularity 18	**ER-I-47/SH** Klip-lok Interface 326	**ER-RC-AE** Rail Clamp for Aeri Rail
		
EZ-GC-AE Grounding Clip II for Aeri Rail	**EZ-GL-U** Rialto Grounding Lug	**EZ-GL- MIC** Grounding Lug, with Microinverter Attachment

3. System Overview

3.1 Overview of PV-ezRack SolarRoof



① Inter Clamp
② End Clamp
③ AeriN Rail
④ Klip lok Interface
⑤ Rail Clamp for AeriN Rail

3.2 Precautions during Stainless Steel Fastener Installation

Improper operation may lead to deadlock of Nuts and Bolts. The steps below should be applied to stainless steel nut and bolt assembly to reduce this risk.

3.2.1 General installation instructions:

(1) Apply force to fasteners in the direction of thread

(2) Apply force uniformly, to maintain the required torque

(3) Professional tools and tool belts are recommended

(4) In some cases, fasteners could be seized over time. As an option, if want to avoid galling or seizing of thread, apply lubricant (grease or 40# engine oil) to fasteners prior to tightening.

3.2.2 Safe Torques

Please refer to safe torques defined in this guide as shown in Installation Instructions. In case power tools are required, Clenergy recommends the use of low speed only. High speed and impact drivers increase the risk of bolt galling (deadlock) If deadlock occurs and you need to cut fasteners please make sure that there is no load on the fastener before you cut it. Avoid damaging the anodized or galvanized surfaces.

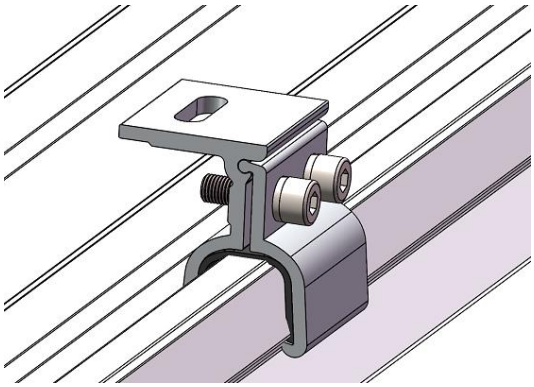
4. Installation Instructions

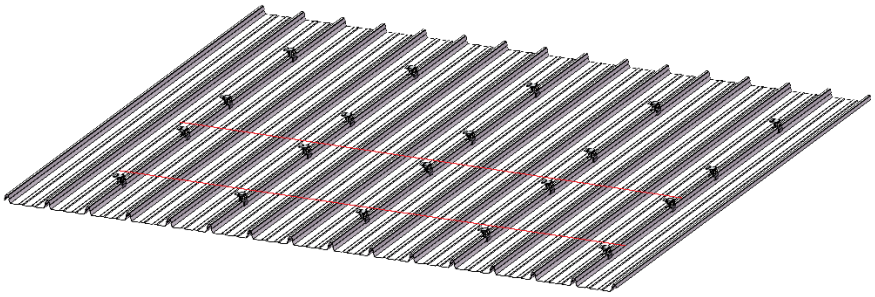
4.1 Klip-lok Interface Installation (take Klip-lok Interface 400-700HS for an example)

According to the installation plan, after determining the position of the first Klip-lok Interface, fix it on the rib of tin roof and fasten lightly.

Recommended torque for M8 bolts is 16- 20N·m.

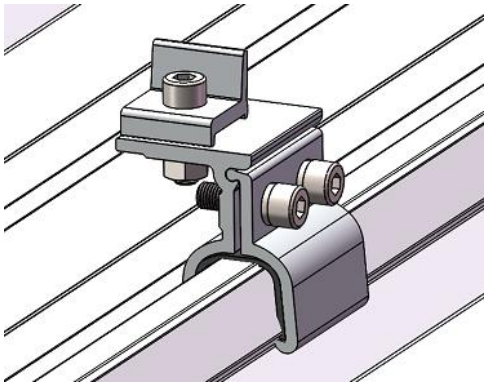
Fix the other Klip-lok Interfaces on the tin roof with the string as shown in the figure on the right.





4.2 Rail Clamp Installation

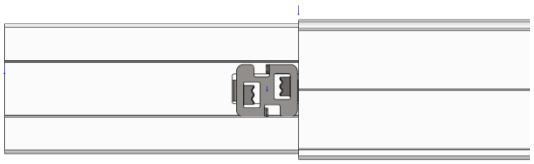
Place Rail Clamp on top of Klip-lok Interface and adjust its direction, as shown in figures on the right.

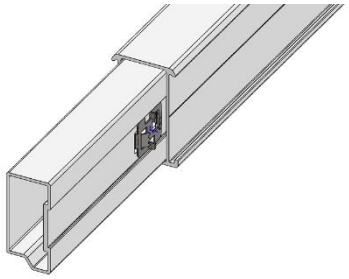


4.3 Rail Installation

4.3.1
To splice two adjacent Rails, insert half of the Splice into one end of the Rail , as shown in figures on the right.

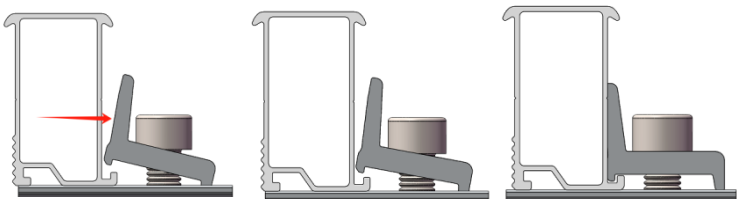
Note:
Skip this step if the rail is long enough and no need splice.



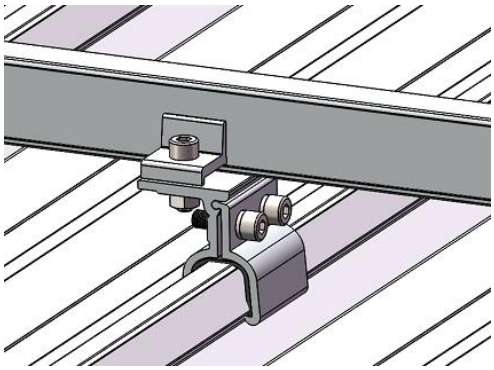


4.3.2
Fix Rails on top of Klip-lok. To make the following adjustment easier, fasten all bolts.

Recommend torque of M8 bolt is 18N.m

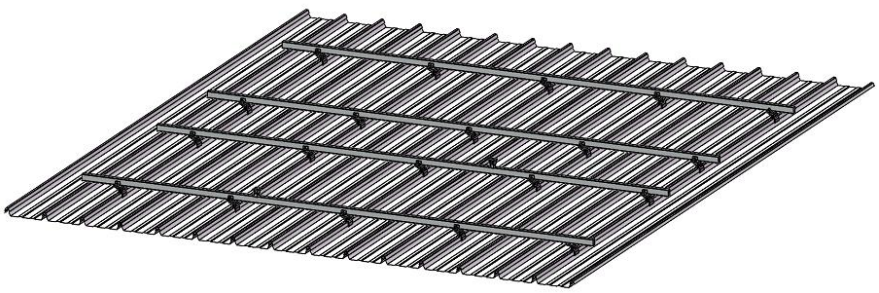


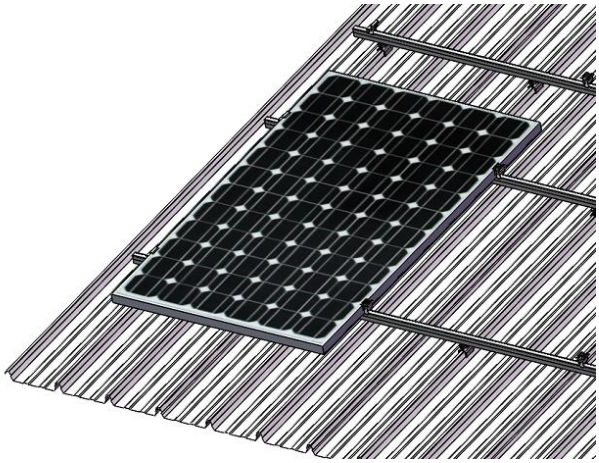
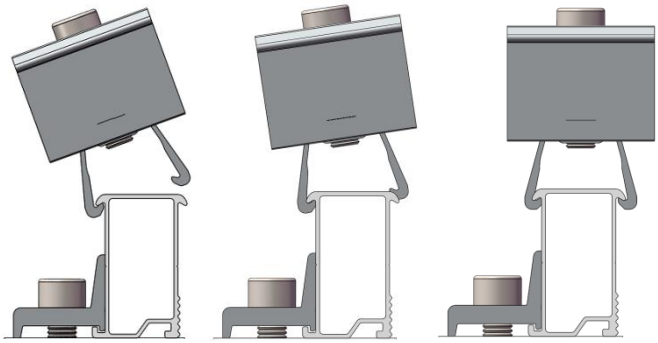
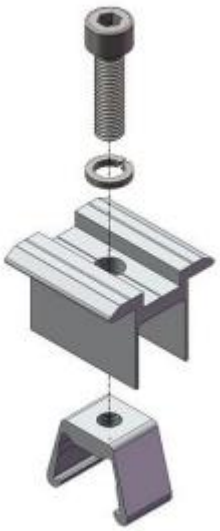
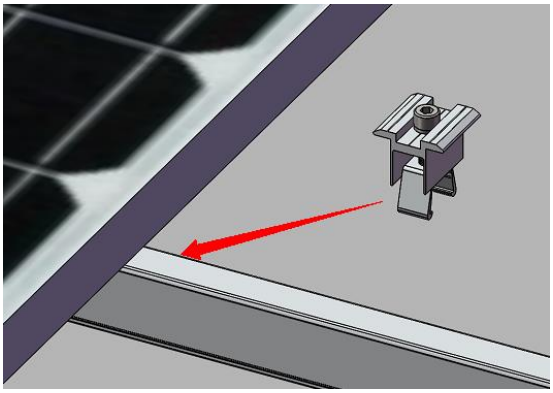
4.3.3
Repeat above steps and install rest of Rails.
Adjust Rails' position with String, and align all ends of Rails.

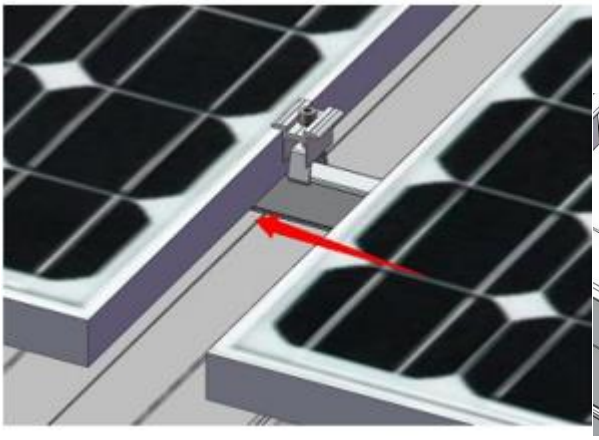
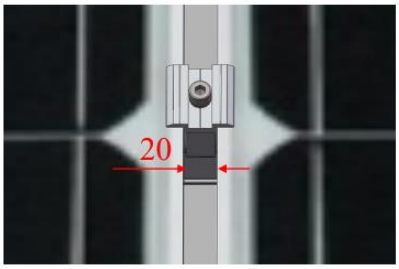
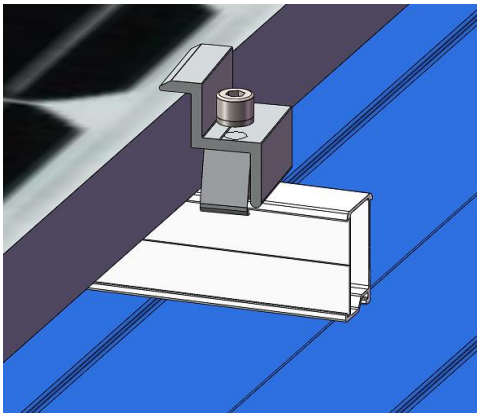
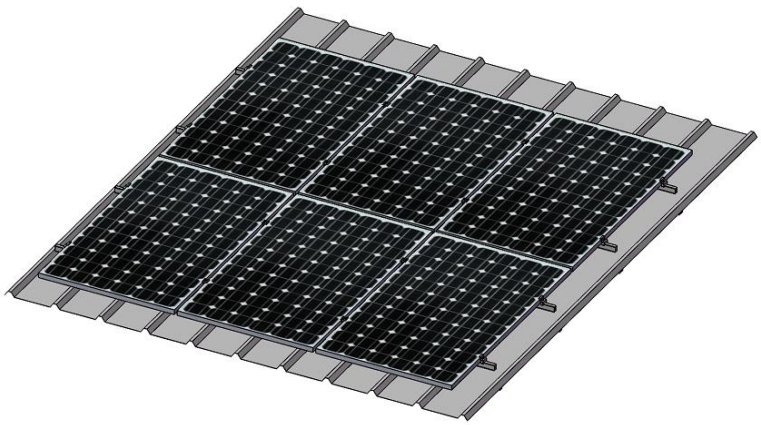


4.4 PV Module Installation

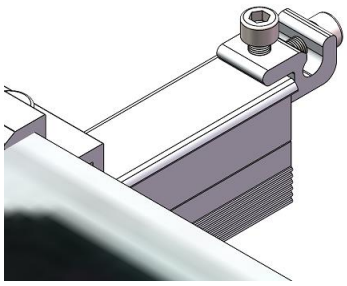
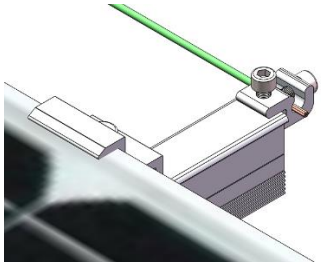
4.4.1
According to your plan, install all Rails.



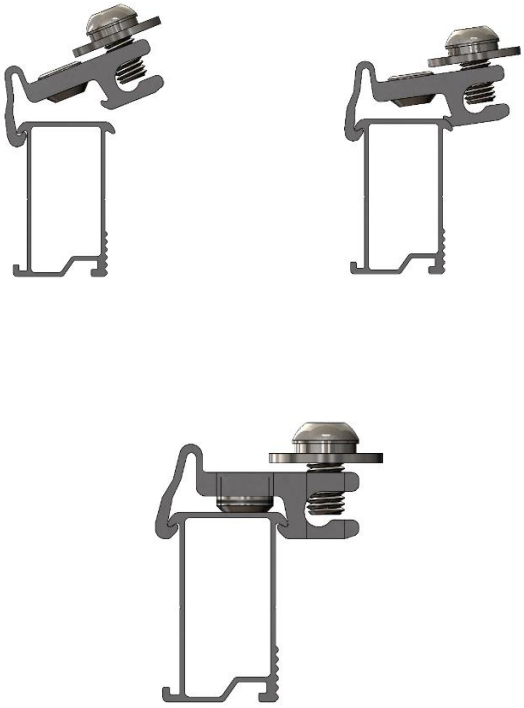
4.4.2 Mark the position of PV-Module on Rails with Marker Pen. Stretch a String as a reference to align PV-Module. Place the first PV-Module on the marked position.	
4.4.4 To buckle to Clamps with Omega-module, put one leg of Omega-module onto the side of the Rail first, then press second leg of Omega-module onto the other side of the rail.	
4.4.5 Buckle the Inter Clamp into the Rail and affix it to the side face of PV-Module. Don't fasten the bolt to make the installation of second PV Module easier.	 

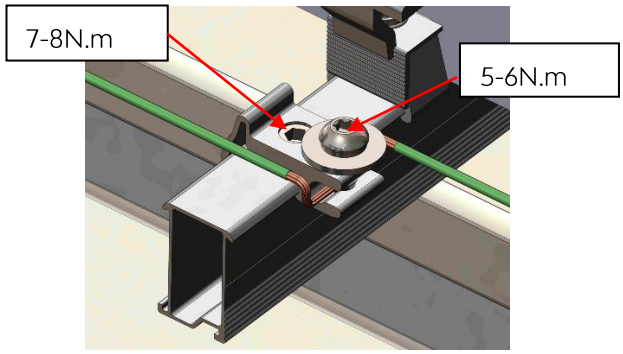
4.4.6 Place the second PV Module, with its side face parallel to the stretched String, and fasten the Inter Clamp. The teeth on Grounding Clip will automatically align when the Inter Clamp is properly installed as shown in Figures on the right. Note: Pay attention not to touch the stretched String when placing the PV Modules Recommend torque of M8 bolt is 13N.m	 
4.4.7 Follow above steps to install other PV-Modules of this row and fasten the End Clamp of another side.	
4.4.8 Repeat above steps to install the rest PV-Modules. The distance of any adjacent face of PV-Module should be 20mm.	

4.5 Grounding Installation

4.5.1 Fix the Grounding Lug into the top channel of Rail as shown the right picture. Note：The recommended fasten torque of the bolt M8*25 is 16~20 N·m.	
4.5.2 Insert the conductor of earthing cable into channel and tighten the bolt to ensure lug is well fixed on the rail and earthing cable is tight.	

4.6 Grounding Lug, with Microinverter Attachment

4.6.1 For microinverter installation, select this grounding lug. First, place one leg of the Omega module onto one side of the rail, then press the second leg of the Omega module onto the other side of the rail. Mount the Grounding lug on the rail with 7~8 N・m. This grounding lug functions both as an earth connection point and a mounting fixture for microinverters.	

4.6.2 To install as a grounding lug : Once grounding lug is secured to the rail, insert the earth cable into the grounding lug and tighten the bolt M8*15 with 5~6 N.m to ensure the earthing cable is tight.	
4.6.3 To install the micro-inverter: Fix the grounding lug onto the rail of the PV mounting system at the position where you plan to install the micro-inverter. Place the micro-inverter onto the lug, tighten the bolt of the grounding lug to the specified torque (16–20 N.m).