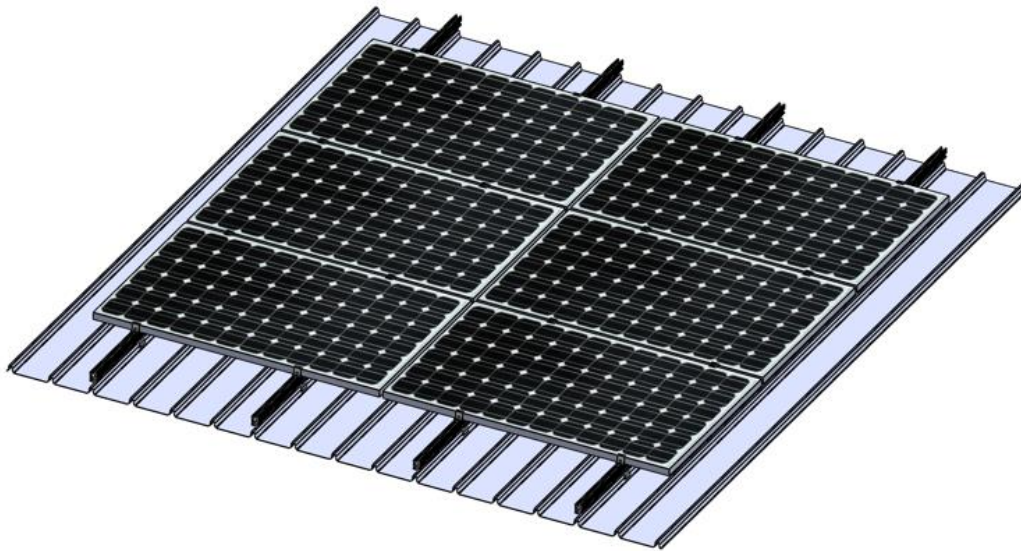


# SolarRoof with B50 Rail

## Non-Penetrative Flush

Code-Compliant Planning and Installation Guide V 1.1



# 1. Introduction

B50 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, Z-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](http://www.clenergy.com) if necessary.

## Contents







Introduction	01
Tools & Component	02
System Overview	04
Installation Instruction	06

### 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

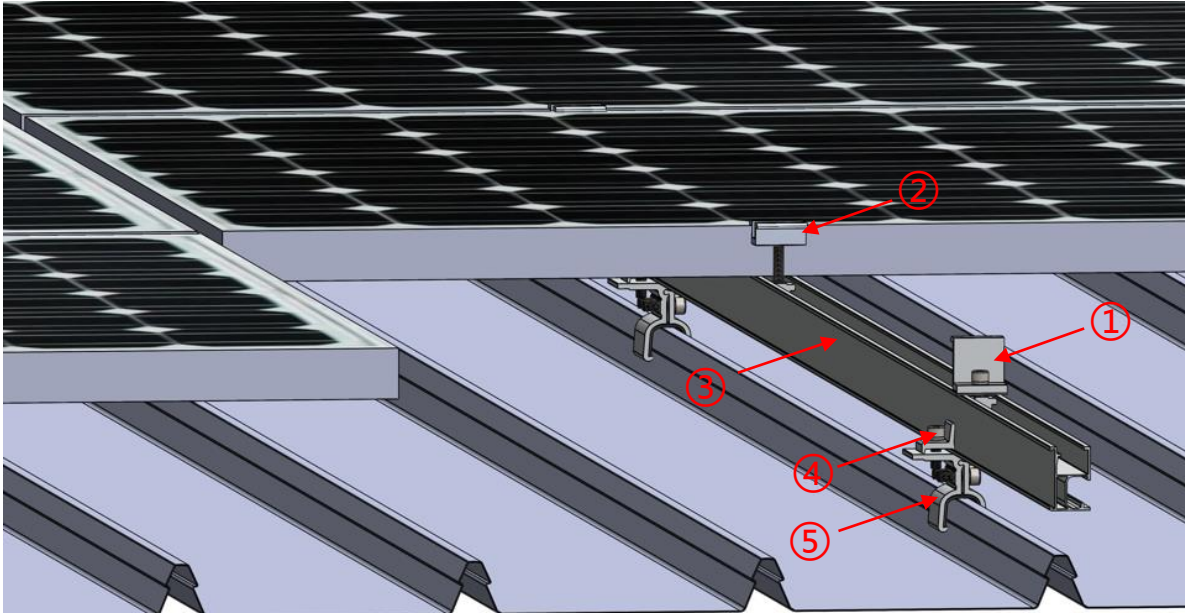
Components		
		
<b>ER-IC-ST35 (40) U18/L50</b> U18 Inter Clamp	<b>ER-EC-ST30/35/40/45/L50</b> End Clamp	<b>ER-R-B50</b> B50 Rail
		
<b>ER-SP-B50</b> Splice for B50 Rail	<b>ER-RC-AE/01</b> Rail Clamp	<b>I-05A-8/25/TH</b> Tin Interface A with M8x25 Bolt and for Threaded Holes

		
<p><b>ER-I-13-TH</b> Klip-lok Interface for Hidden 26</p>	<p><b>ER-I-16-TH</b> Klip lok interface for Standing seam 22</p>	<p><b>ER-I-17-C</b> Klip lok interface for standing seam 8</p>
		
<p><b>ER-I-18-TH</b> Interface for Standing Seam 20</p>	<p><b>ER-I-20A-TH</b> Klip-lok interface for Angularity 18A</p>	<p><b>ER-I-31/45/M8</b> Klip-lok Interface 400-700HS</p>
		
<p><b>ER-I-32/45/M8</b> Klip-lok Interface 406 with U-opening</p>	<p><b>ER-I-47</b> Klip lok Interface 326</p>	<p><b>EZ-GL-STII</b> Grounding Lug II</p>
		
<p><b>EZ-GC-ST</b> Grounding Clip, with Clenergy Logo</p>	<p><b>EZ-CC-PV/2</b> Capilano Cable Clip for PV Panels for holding 2 cables</p>	

### 3. System Overview

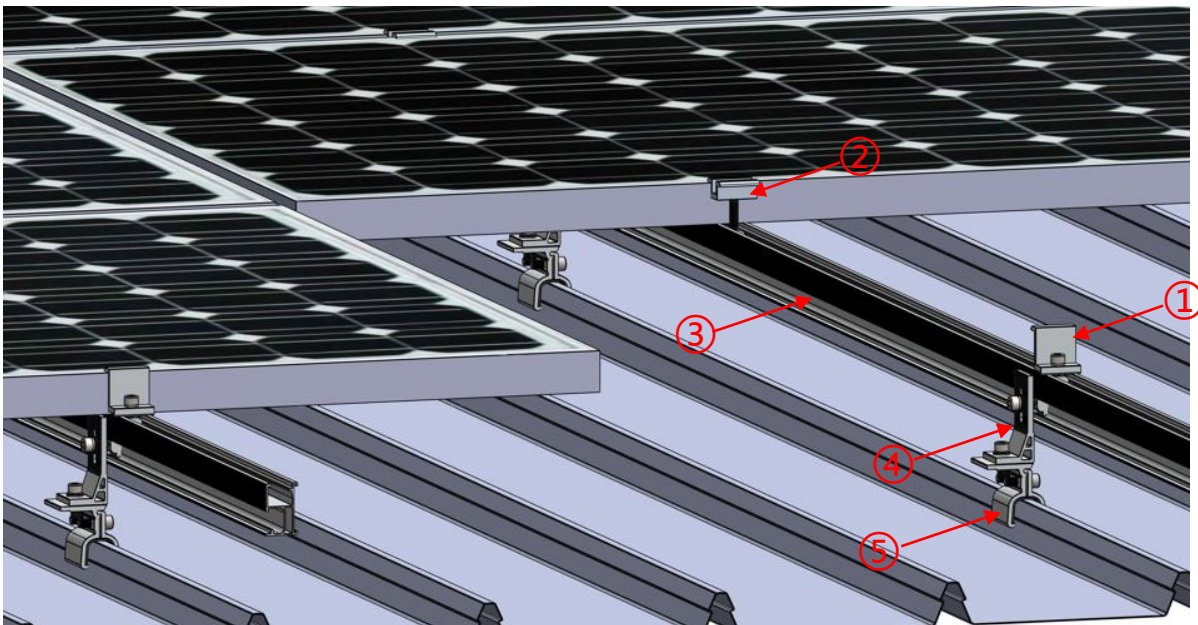
#### 3.1 Overview of PV-ezRack SolarRoof

- With Rail-clamp (use Klip-lok Interface 400- 700HS as an example)



① End Clamp ② U18 Inter Clamp ③ B50 Rail ④ Rail Clamp ⑤ Klip-lok Interface

- With Tin Interface (use Klip-lok Interface 400- 700HS as an example)



① End Clamp ② U18 Inter Clamp ③ B50 Rail ④ Tin Interface A with Z-module ⑤ Klip-lok Interface

---

## 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

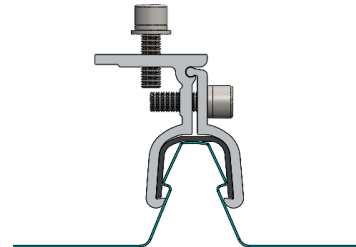
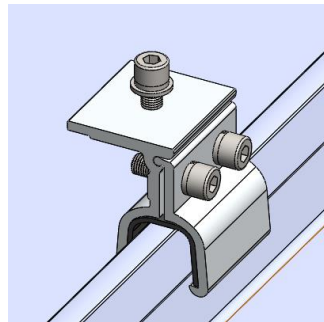
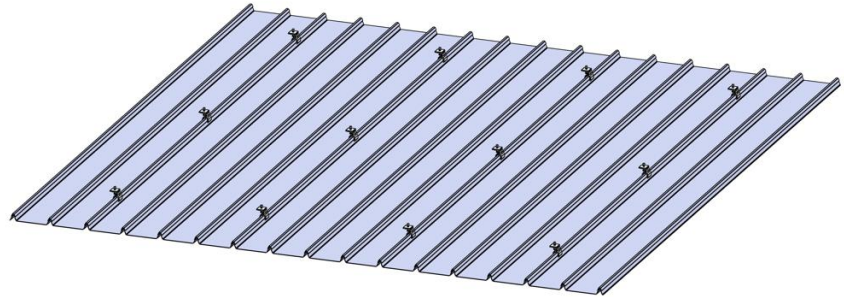
Please refer to safe torques defined in this guide as shown in Installation Instructions. In case power tools are required, Clenergy recommends the use of low speed only. High speed and impact drivers increase the risk of bolt galling (deadlock) If deadlock occurs and you need to cut fasteners please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



## 4. Installation Instructions

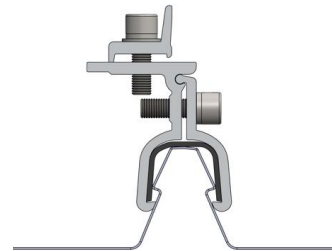
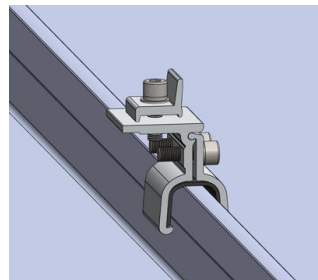
### 4.1 Klip-lok Interface Installation

According to your plan, fix the Klip-lok Interface on the ribs of metal sheet. Fasten the bolts of the Klip-lok Interface within 16-20N.m after adjusted properly.

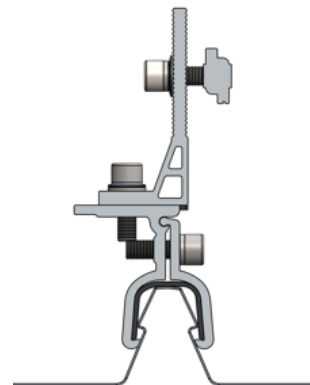
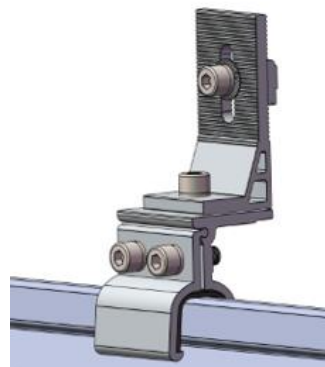


### 4.2 Rail Clamp & Tin Interface Installation

When using Rail Clamp, fix the Rail Clamp on the top face of the Klip-lok Interface. Fasten the bolt slightly before installing the B50-Rail.



When using Tin Interface, fix the Tin Interface on the top face of the Klip-lok Interface, fasten the Tin Interface and the Klip-lok Interface using M8 bolt within 16-20N.m after adjusted properly.



### 4.3 Rail Installation

#### 4.3.1

To connect multiple rails together, slide half of splices on the rear side of the pre-assembled rails. Fasten the first M8 Allen bolt firmly using the Allen key. Then slide the next rail splice into the other half of splice. Tighten the second M8 Allen bolt using the Allen key.

Note:

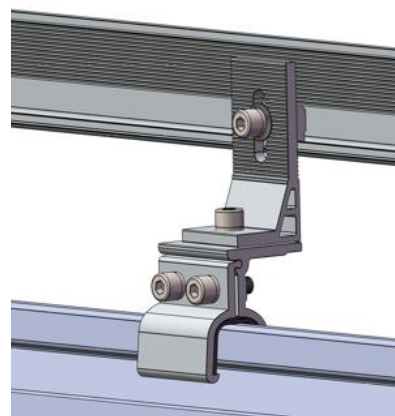
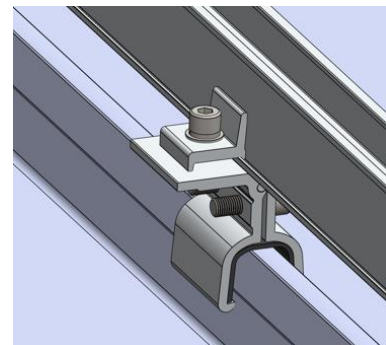
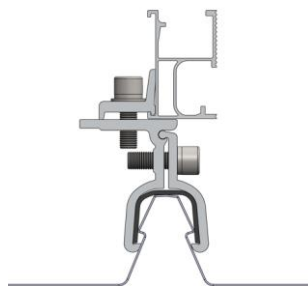
Skip this step if the rail is long enough and no need to splice.



#### 4.3.2

When using Rail Clamp, place the B50-Rail on the Klip-lok Interface, uplift the Rail Clamp and click it into the side channels of the B50-Rail as shown in the right figure. Fasten the Rail Clamp within 16-20 N.m after the Rail is positioned properly.

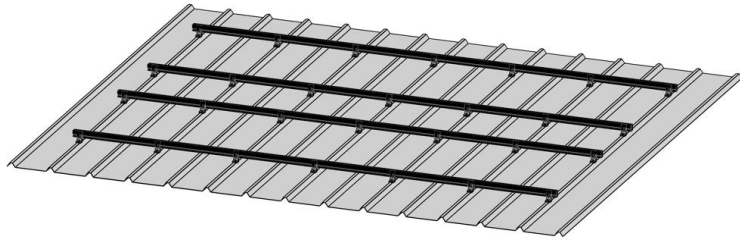
When using Tin Interface, fix the B50-Rail and Tin Interface as shown in the right figure and then fasten within 16-20 N.m. after Rail is positioned properly.





4.3.3

Repeat above steps to install the rest of Rails.  
 Adjust Rails' position with string, and keep all ends of rail aligned.



**4.4 PV Module Installation**

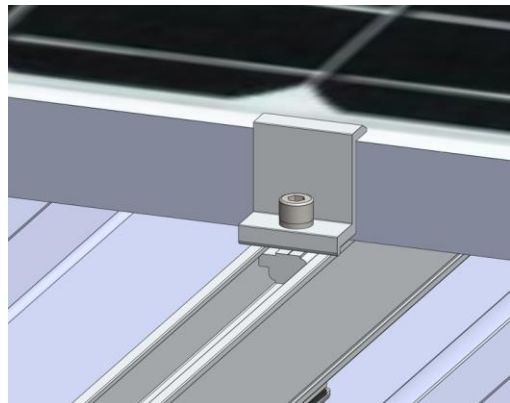
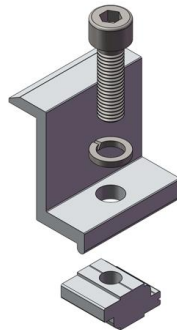
4.4.1

Mark the position of PV-Module on Rails with Marker Pen. Stretch a String as a reference to align PV-Module.



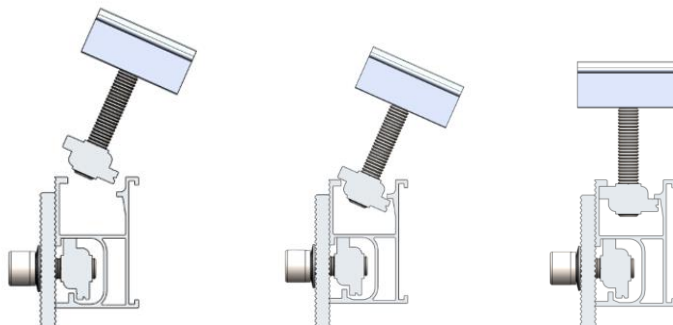
4.4.2

Place the first PV Module on the Rail according to your plan, and fix it in place using the End Clamps. Then fasten lightly as shown in the figures on the right.  
 Recommend torque of M8 bolt is 16-20N.m



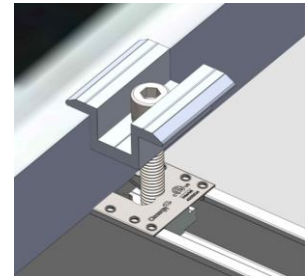
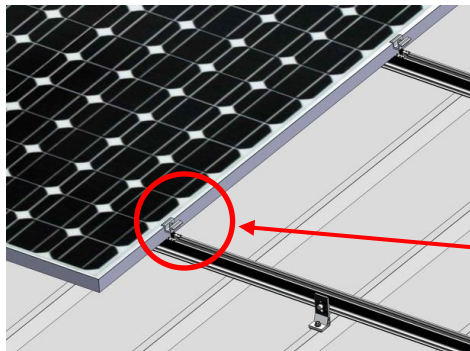
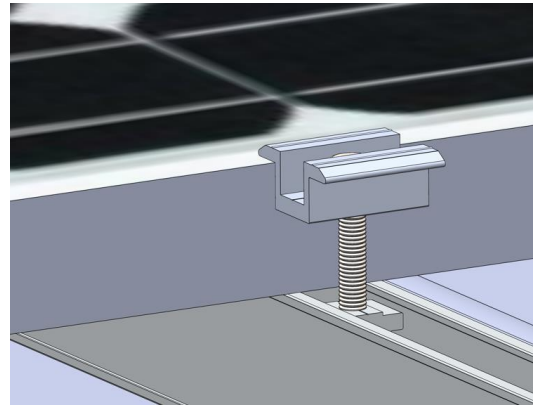
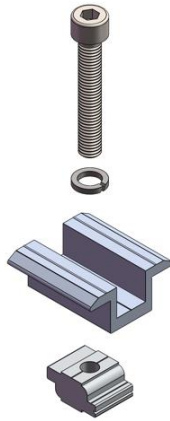
4.4.3

To install to Clamps with Z-module, put one leg of Z module into the channel of the Rail first, then press second leg of Z module into the channel.

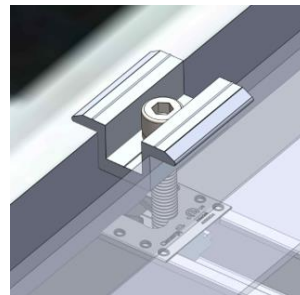


4.4.4

Slightly lift the PV Module and slide Inter Clamps and Grounding Clips into position. The teeth on Grounding Clip will automatically align when the Inter Clamp is properly installed as shown in the figures on the right.



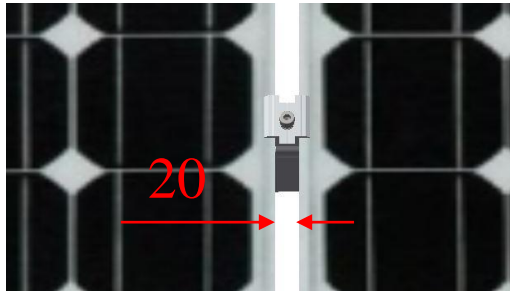
Loosely place the next framed PV Module into the other side of the Inter Clamp and Grounding Clip as shown in Figure 8.



4.4.5  
 Place the second PV Module, with its side face parallel to the stretched String, and fasten the Inter Clamp.

Note:  
 Pay attention not to touch the stretched String when placing the PV Modules.

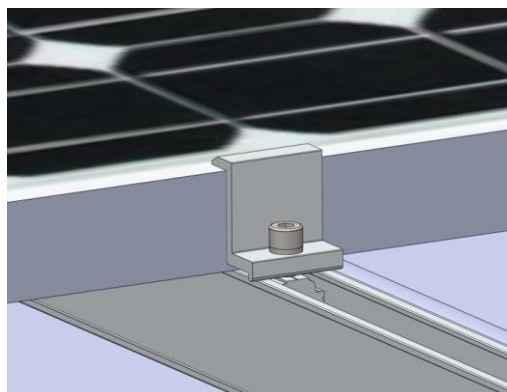
Recommend torque of M8 bolt is 16-20N.m.



**Important Notes:**

- To fix the Grounding Clip properly, ensure the frames of PV Modules are completely pressed against End and Inter Clamps and Grounding Clips. Visually check that Grounding Clips are positioned properly;
- Grounding Clips are intended for SINGLE USE ONLY! Only fasten the bolts down with recommended torque of 16~20 N · m when the position of the PV Module is finalized. (Only slightly tighten bolts to keep PV Modules in place prior to the final check).
- When replacing defective PV Modules, it is required to replace the grounding clips under the defective PV Modules.
- When removing defective PV Modules, it is required to keep sufficient grounding clips to maintain all other PV modules' earthing continuity with the rail. It is required to install grounding clips under end clamps when necessary to achieve this;
- For array requiring more than 2 rows of rails, the layout and quantity of grounding clips are the same as those for 2 rows of rails.

4.4.6  
 Following the above steps to install other PV-Modules of this line and fasten the End Clamp at another side of rail.



#### 4.4.7

Repeat above steps to install the rest PV-Modules. The distance of any adjacent face of PV-Module should be 20mm.



### 4.5 Grounding Lug Installation

It is required to install one Grounding Lug per row of rail. The recommended fasten torque of the bolt M8\*25 is 16~20 N · m. For an array of PV modules having two rows of rails, two grounding lugs are required. For an array of PV modules having more than two rows of rails, two grounding lugs are required as well but grounding lugs need to be installed on the rows having grounding clips.

Fixing grounding lug with rail, Strip earthing cable (the maximum size is 10 mm<sup>2</sup>), insert the conductor into the Channel and tighten the bolt M6\*14 with 5~6 N · m to ensure the earthing cable is tight.

Note: Please check the electrical resistance between rail and earthing cable conductor to ensure the bonding is made.

