

# Installation Manual

BISOL EasyMount™

Quick RAIL





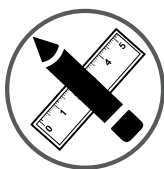
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## GENERAL REQUIREMENTS

**The sole purpose of this installation manual is to demonstrate the installation of BISOL EasyMount™ mounting systems, therefore PV module installation guidelines and related safety precautions are not a part of this manual. For guidelines on how to safely and effectively install BISOL PV modules please refer to the PV installation manual, published on [www.bisol.com](http://www.bisol.com).**



### **PV design:**

The installer carries all responsibility for PV system dimensioning, static calculations of the roof, weather and environmental conditions at location, proper selection and use of components and their mounting as well as the mechanical durability and water tightness of the installed interface connections at the building surface. All safety warnings outlined in this manual are to be closely considered.



### **Roof:**

The continual pressure loading capacity (point load) of the insulation and the roofing material must be checked thoroughly and found to be sound before installation. If the compression strength of the roof surface is not sufficient, extra support surfaces must be added.

The roof must be in good condition and strong enough to bear the weight of the solar panels, including associated materials, ballast, wind and snow load. The customer is responsible to check the stability of the roof structure and, when necessary, employ a builder to correct it.

The customer is responsible to check the compatibility of EasyMount™ Quick RAIL mounting materials with local climate conditions (salt, acidity, sulphates etc.) and roof materials. The types of materials used in the Quick RAIL are stated in the product datasheets.



### **Installation work:**

All installation work must be carried out by a specialised company with qualified personnel. Strict safety and accident prevention measures as defined by relevant regulations must be carried out and should be known by the installer. Appropriate protective equipment for work at height must be used throughout the installation process.








### **Electrical work:**

Although electrical connections are strictly not part of this manual, some safety warnings are in place. PV modules and mounting structure must be grounded even when the site is already equipped with lightning protection. PV modules are under high voltage and generate electrical current even in low light conditions. When modules are connected in series, life-threatening voltage is present at the end of the terminals. Open circuited branches can cause electric arc when in touch with conductive surface. Electrical installations must not be carried out in case of dampness.

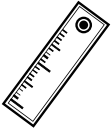
*BISOL Production Ltd. does not accept responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected to PV system design and dimensioning, installation work, operation, use or maintenance. A failure to adhere to the guidelines stated in this document and/or in the construction plan may void all guarantee and liability claims for the product. The information in this manual is based on BISOL Productin's knowledge and experience; but such information, including product specification (without limitations), and suggestions do not constitute a guarantee, express or implied. BISOL Production reserves the right to change the installation manual as well as product specifications without prior notice.*

## COMPONENTS OVERVIEW

	Component	ID Code	Component description
1		SEK-EMRL80U_370	EasyMount™ ALU Rail 80 x 370 mm Universal
2		SEK-EPDMR_80_30	EPDM rubber insert 3 mm self-adhesive, L = 30 mm W = 80 mm
3		SEK-JF3_55_25	Screw self-drilling 5.5 x 25 mm JF3 - 2
4		SEK-JF3_55_35	Screw self-drilling 5.5 x 35 mm JF3 - 2
5		EM-CLA.EA30S.3	Clamp End EasyMount™ 30 mm, assembled
6		EM-CLA.EA35S.3	Clamp End EasyMount™ 35 mm, assembled
7		EM-CLA.MA30S.3	Clamp Middle EasyMount™ 30mm, assembled
8		EM-CLA.MA35S.3	Clamp Middle EasyMount™ 35mm, assembled



## TOOLS REQUIRED



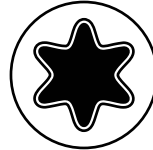
Measuring tool



Electric drill



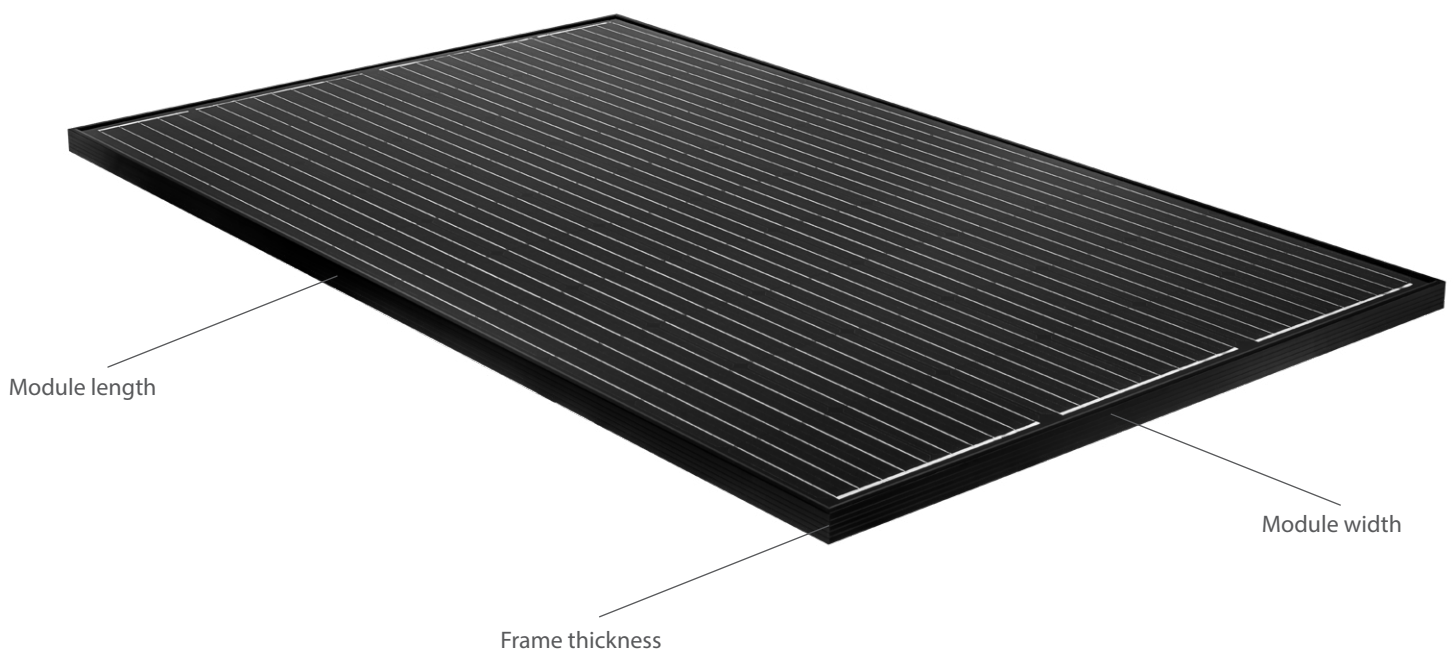
Torque wrench



Torx T30 socket

## PLANNING THE PV LAYOUT

### Project Design





# System Design Strength

Fastening screws are made of stainless steel. For the corrosion protection, the rules given in EN 1090-2:2008, EN 1993-1-3:2006 and EN 1993-1-4:2006 are taken into account.

Choose the Table 1 or 2 according to the specifics of your applications and the material your trapezoidal metal sheet roof is made of:

- for steel min. S280GD – EN 10346, choose Table 1,
- for aluminium  $f_{u,min.}$  165 N/mm<sup>2</sup>, choose Table 2.

Design resistances given in Tables 1 and 2 are valid for **single screw** per fastening point and are determined according to ETA-10/0200. Design resistances for fastening points **with 4 screws** can be calculated by multiplying the values in Tables 1 or 2 with the number of screws. Together with the above, **the following formulas** are used to calculate the values of design resistance:

1. The recommended partial safety factor  $\gamma_M = 1.33$  is used in order to determine the corresponding design resistances, provided no values are given in national regulations of the member state in which the fastening screws are used or in the respective National Annex to Eurocode 3.

$$N_{Rd} = \frac{N_{Rk}}{\gamma_M} \quad V_{Rd} = \frac{V_{Rk}}{\gamma_M}$$

2. In case of combined tension and shear forces (windy and snowy weather conditions), the linear interaction formula according to EN 1993-1-3:2006, section 8.3 (8) is taken into account.

$$\frac{N_{Sd}}{N_{Rd}} + \frac{V_{Sd}}{V_{Rd}} \leq 1.0$$

Table 1

Steel trapezoidal metal sheet (min. S280GD)							
Trapezoidal metal sheet thickness [mm]	0.40	0.50	0.55	0.60	0.75	0.88	1.00
Pull-out design resistance [ $N_{Rk}$ in kN]	0.60	0.82	0.94	1.14	1.44	1.46	1.46
Shear design resistance [ $V_{Rk}$ in kN]	0.96	1.56	1.56	1.56	1.56	1.56	1.56

Table 2

Aluminium trapezoidal metal sheet ( $R_{m,min.} = 165 \text{ N/mm}^2$ )							
Trapezoidal metal sheet thickness [mm]	0.50	0.60	0.70	0.80	0.90	1.00	1.20
Pull-out design resistance [ $N_{Rk}$ in kN]	0.35	0.45	0.58	0.69	0.80	0.91	1.13
Shear design resistance [ $V_{Rk}$ in kN]	0.62	0.71	0.79	0.88	1.04	1.19	1.24



# Designing the PV Module Layout

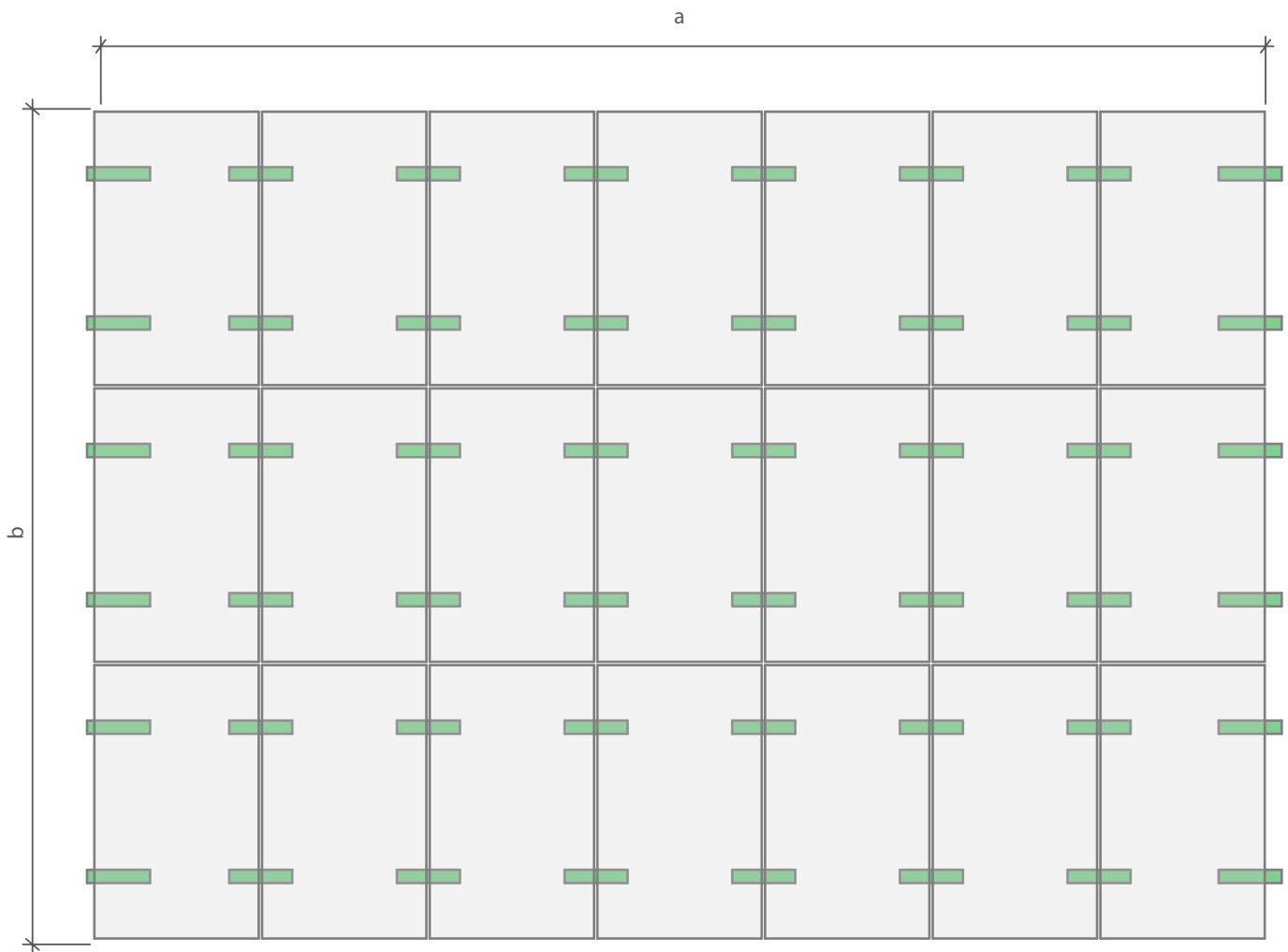
## Portrait Orientation

### Minimal horizontal block space required:

$a = (\text{module width} + 20 \text{ mm}) * \text{number of modules in one row}$  ( $a_{\text{max}} = 16 \text{ m}$ )

### Minimal vertical block space required:

$b = (\text{module length} + \text{min } 20 \text{ mm}) * \text{number of modules in one column}$





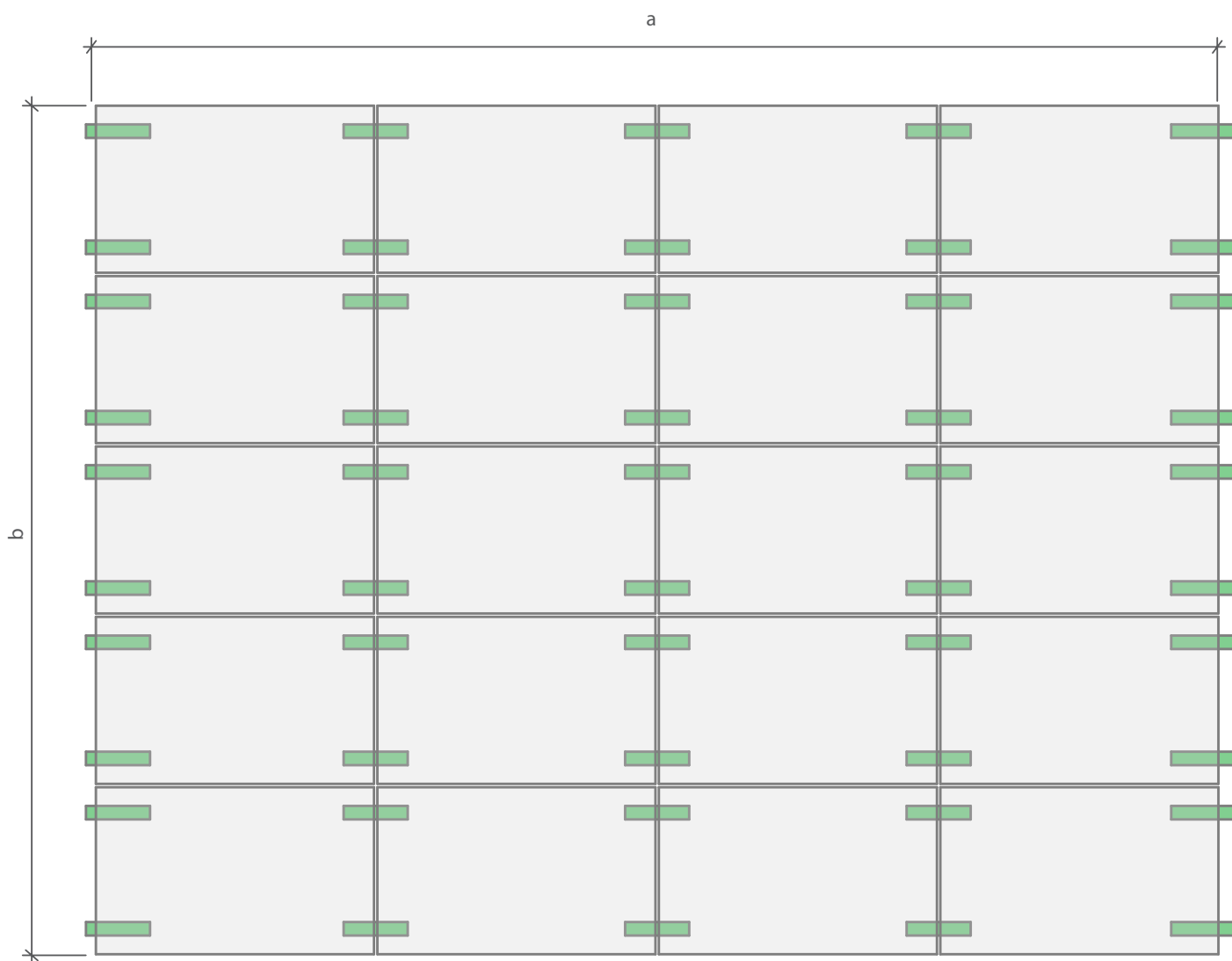
## Landscape Orientation

### Minimal horizontal block space required:

$a = (\text{module length} + 20 \text{ mm}) * \text{number of modules in one row}$  ( $a_{\text{max}} = 16 \text{ m}$ )

### Minimal vertical block space required:

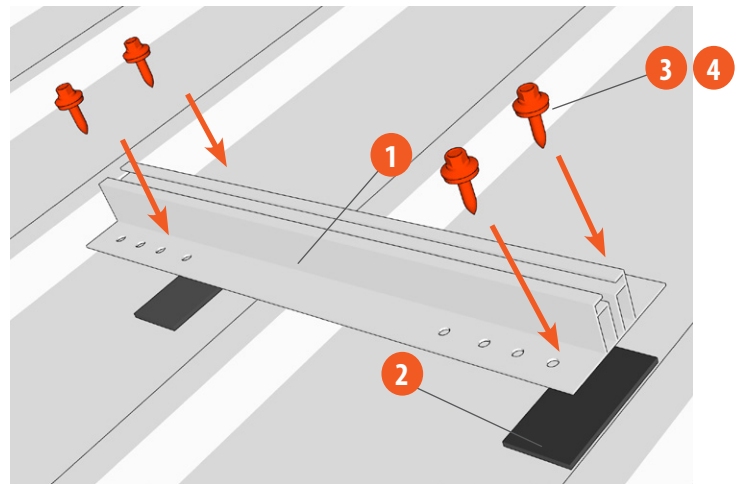
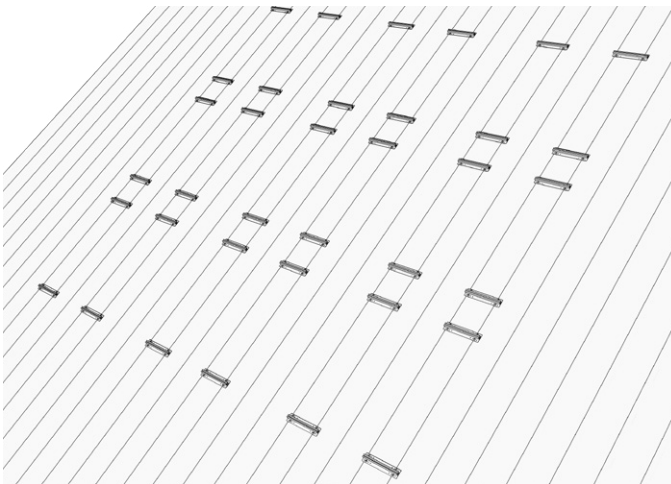
$b = (\text{module width} + \text{min } 20 \text{ mm}) * \text{number of modules in one column}$





## ASSEMBLY

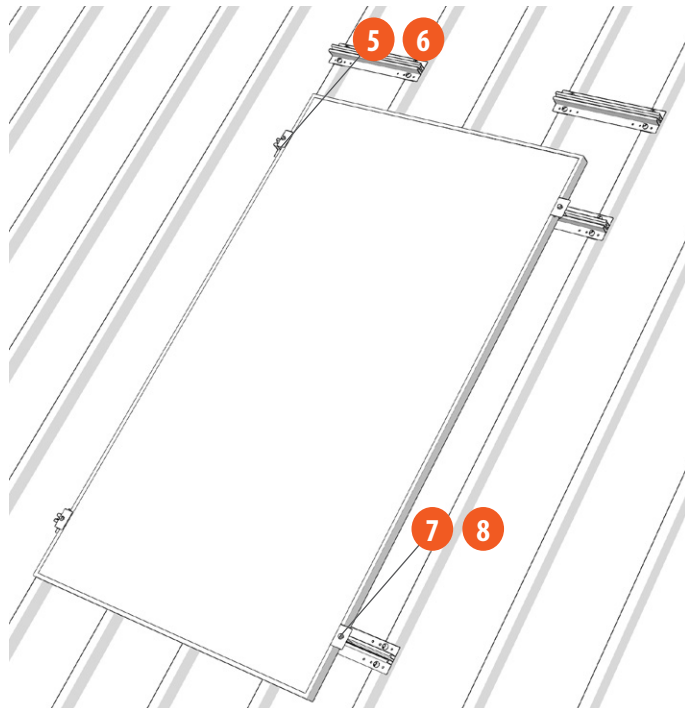
### STEP 1 & STEP 2: Placing the EPDM Protective Rubber & Fixing the Rails



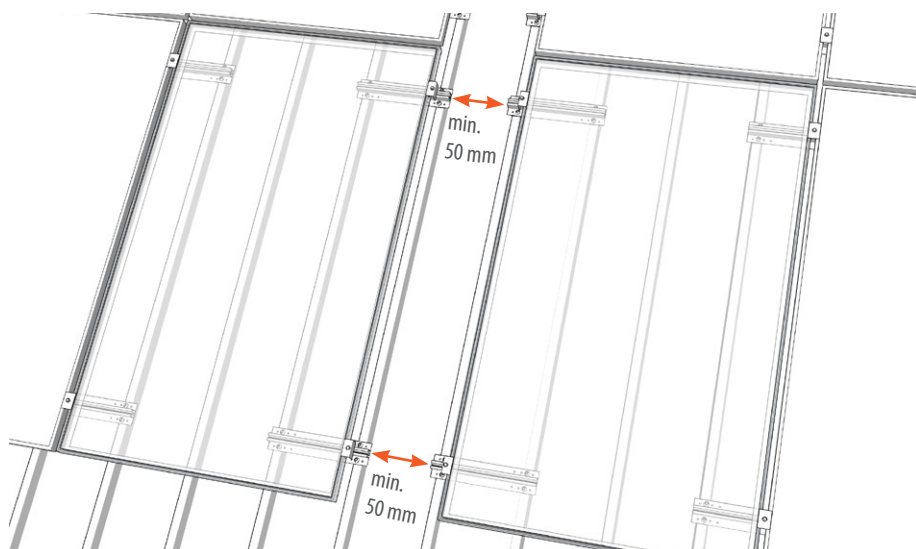
Stick 2 pieces of the self-adhesive protective EPDM rubber on the previously calculated spots. Place the rail above it and fix it by driving in 4 screws. Repeat until all the needed rails are installed.

## STEP 3: Attaching PV Modules

Attach the PV modules with clamps using 11 Nm torque. Use the end clamp on the edges and the middle clamp between two PV modules.



Maximum continuous length of a single block (horizontal) is 16 m. After this length, a space of at least 50 mm between the rails for thermal separation must be added.



# TERMS AND CONDITIONS

BISOL Production Ltd. as manufacturer of BISOL EasyMount™ mounting solutions in connection with their installation takes no responsibility for the design solutions of individual designers, also assumes no responsibility in connection with the installation of BISOL EasyMount™ mounting solutions by a third party and contrary to these instructions, as well as for the choice of mounting structure in this regard.

BISOL Production Ltd. does not accept liability and expressly disclaims liability for loss, damage or costs arising from or in any way related to the design and dimensioning, installation work, operation, use or maintenance of the solar system.

Failure to follow the guidelines set out in this document and / or in the construction plan may invalidate all claims for product guarantees and liabilities.

The information in this manual is based on the knowledge and experience of the BISOL Production Ltd., but such information, including product specifications (without limitation), and suggestions do not constitute guarantees, expressed or implied. BISOL Production Ltd. reserves the right to change the installation instructions and product specifications without prior notice. The most recent version of this installation manual is published on official website [www.bisol.com](http://www.bisol.com).

In addition, our General Sales Terms and Conditions for Supply of Goods and Services (GSTC) as well as Standard Limited Guarantee terms and conditions for mounting systems, both published on the website [www.bisol.com](http://www.bisol.com), apply.



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