Installation manual

SOLAR-HOOK mounting system

SOLAR-HOOK GmbH
Fuhrmannsgasse 3
79108 Freiburg im Breisgau
info@solar-hook.de
www.solar-hook.de

This document contains 16 pages

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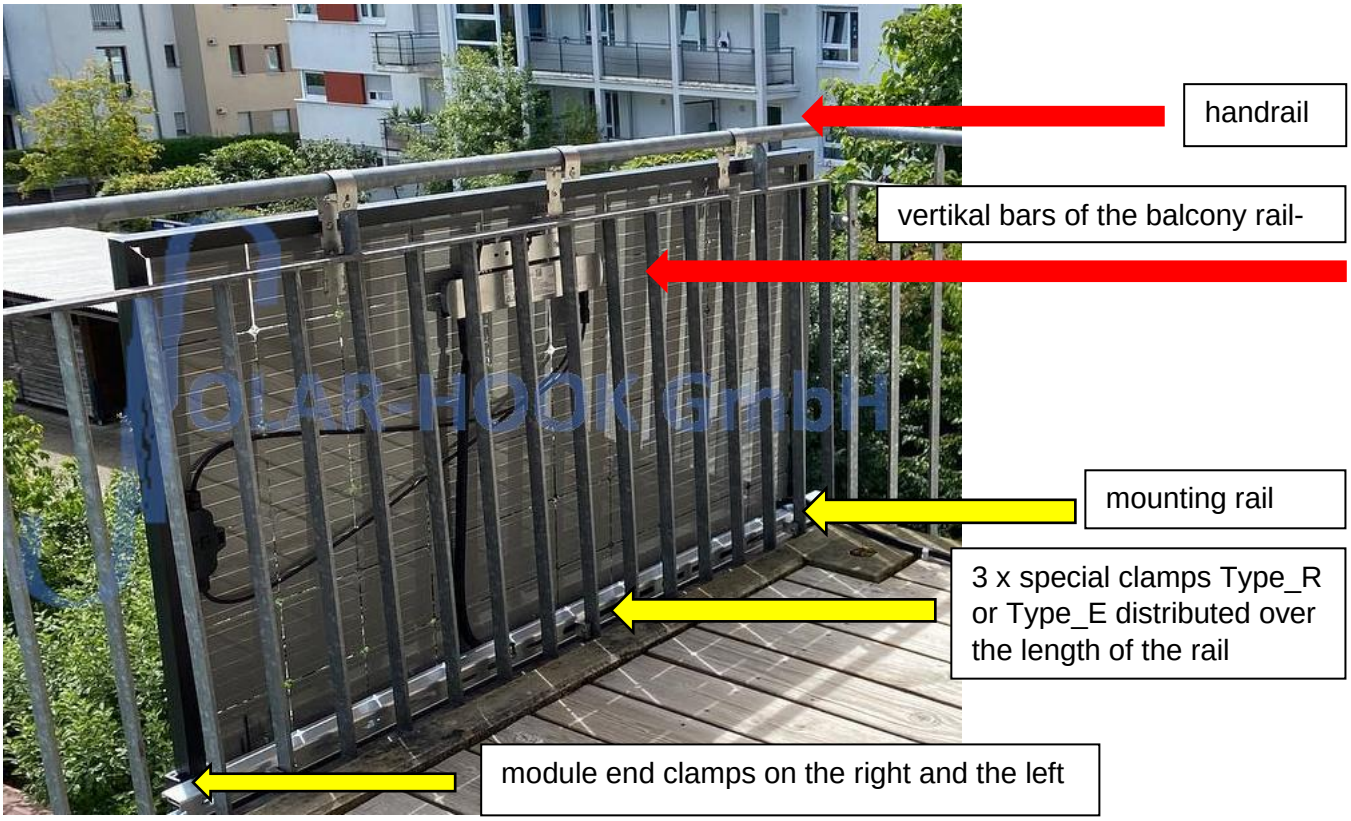
1 Revision history

Version	Description	Date	PID
V2.0	Initial version 2.0	02.01.2021	MSC
V2.1	Tightening torques, optional accessories	01.02.2021	MSC
V2.2	DIN-Standards Screws + Nuts Ü-marking SOLAR-HOOK	08.02.2021	MSC
V2.3	Mechanical component testing	21.06.2021	MSC
V2.4	Adjustment of inspection intervals	27.07.2021	MSC
V2.5	Reference to work gloves	29.10.2021	MSC
V2.6	Improved V2A arch (exchange of photos)	09.11.2021	MSC
V2.7	Exchange Fig. 3 and Fig. 14	18.11.2021	MSC
V2.8	Module frame height changed to 30-42mm	24.03.2022	MSC
V2.9	Static calculation – up to 7 m above ground	25.05.2022	MSC
V2.10	Mounting rail, short screws, length adjustment	11.07.2022	MSC
V2.11	Definition,distance mounting rail to PV module frame, maximum length of PV module	03.08.2022	MSC
V2.12	Mounting rail for 2 modules in a row removed as not available for shipping	17.08.2022	MSC
V2.13	Disclaimer customized Installation mounting rail – advice clamping range	21.10.2022	MSC
V2.14	Copyright – fig.8b special clamp Type_E – QR-Code	19.12.2022	MSC
V2.15	14 – V2A Arch – 16 – align the PV module	07.02.2023	MSC

2 Definition



3 General

Please carefully read our data sheet and compare the messuremens of all components to fit to each other and expecially the length of your solar module.

In these installation instructions you will learn how the SOLAR-HOOK is easily, quickly and safely mounted on a solar module, hung on a balcony railing and firmly conntected to the mounting rail. Likewise, how the mounting rail is securely attached to a balcony railing. Despite the highest quality standards, sharp edges may occur on metallic components. We recommend wearing work gloves during installation. The latest version of these installation instructions, which can be downloaded from www.solar-hook.de, is always valid.

4 Copyright

5 Commissioning of the balcony photovoltaic system

The generally recognised rules of technology (VDE regulations, VDE application regulations) and grid connection guidelines valid at the time of commissioning in your country must be complied with.

6 Static / structural requirements

Check whether the static conditions of your balcony railing are sufficient to take additional loads. Check your state building code for requirements for the erection of installations and systems. The static calculation is made for use up to 7 m above ground.

7 Inspection intervals / maintenance

Check the screw connections and nuts for tightness once a year.

Check all mechanical components (SOLAR-HOOK, module clamps, mounting rail) for thight fit and possible visual changes once a year.

Press the test button on all RCDs twice a year.

Clean the glass surface of the solar module with distilled water when dirty. Eg. in spring af ter the pollen count or after rainfall.

8 Disclaimer

The SOLAR-HOOK mounting system is only permitted for framed photovoltaic modules. Both, glass glass modules as well as glass-foil modules may be used. Our liability refers to the components of the scope of delivery of a Solar-Hook mounting system, only. Expecially in Germany, please observe the respective state building regulations regarding the use of glass-glass or glass-foil modules. The conformity of the contents of these installation instructions with the illustrated hardware has been carefully checked. We reserve the right to make constructional changes or to alter technical data at any time. Accordingly, the claiming of rights based on the instructions, illustrations, drawings or descriptions is excluded. Subject to possible errors, SOLAR-HOOK GmbH shall not be liable for damages resulting from assembly errors, inappropriate or unsuitable use or unauthorised repairs or modifications. In case of assemblies that deviate from these instructions, the exclusion of liability applies. In case of any different interpretation of the texts of this manual in Germany and English, the German wording shall be decisive.

9 Visual conspicuities / scratches in the materials

Visual conspicuities or scratches on the SOLAR-HOOKs, the special clamps or the mounting rail, caused by industrial production, are not defects and will not be recognised as such. Potential abnormalities in the surface finish do not affect the safety or functionality of the overall system.

10 Scope of delivery of a SOLAR-HOOK mounting system

3 x SOLAR-HOOK with moulded flaps and rubber protection in the inside of the SOLAR-HOOK mounting bracket

3 x M6 x 20 mm (screw short)

3 x M6 washer

3 x M6 x 65 mm (screw long)

6 x M6 self-locking nuts with flange and locking teeth

1 x mounting rail 180 cm long (on special request 200 and 220 cm)

3 x special clamp for mounting on **vertical rectangular** balustrade rods, incl.

M8 stud bolt and M8 / SW 18 flange nut for the mounting rail (order **Typ_E**)

alternatively

3 x special clamp with V2A arch for mounting on **vertical round** balustrade rods, incl.

M8 stud bolt and M8/SW 18 flange nut for the mouting rail (order **Typ_R**)

2 x module end clamps, suitable for rail and solar module (frame thickness 30-42mm)

11 Optional accessories for mounting an inverter

to a SOLAR-HOOK

1 x M6 x 20 mm screw short

1 x M6 self-locking nut with flange and locking teeth

12 Required tools / materials

Allan 4 and 5 for small ratchet

Torx 30 for small ratchet

SW 8 socket for small ratchet

Extension for small ratchet

SW 18 socket for large ratchet

Combination pliers

10mm open-end spanner

Torque spanner adjustment range 4-10 Nm

Thread locking compond

Work gloves 

Figure 1/required tools

13 Preparation of the solar module

For one solar module of standard size with a **maximum length of 1760 mm** you need 3 SOLAR-HOOK mounting brackets (see scope of delivery for a mounting set)

The SOLAR-HOOK is manufactured with 3 pairs of moulded flaps and a phase insertion aid.

Figure 2/pairs of moulded flaps

Figure 3/pairs of moulded flaps and phase as insertion aid

Insert the SOLAR-HOOK with the selected pair of flaps at the level of the existing drill holes in the module frame until the corresponding drill holes in the module frame and hole in the Solar-Hook mounting bracket are congruent. Now insert the M6 x 20 mm screw through the hole in the SOLAR-HOOK mounting bracket and the hole in the module frame. Place the washer over the thread of the screw from the inside of the module frame Fig.4

Figure 4/SOLAR-HOOK slided on the module frame with washer

Place the lock nut on the bolt and fix it lightly with a 4mm Allen key / Torx 30 - do not tighten the nut yet.

Please note:

Some module manufacturers offer solar modules without mounting holes in the frame. Be sure to check the module data sheet in advance.

Figure 5/lightly fixed screw M 6x20

The inverter is attached to the lower mounting hole on the middle of the three SOLAR-HOOK mounting brackets to be mounted. The prerequisite for this is that the inverter has a suitable mounting plate. Screw the inverter in place with a short M6x20 screw (optional accessory)

Thightening torque 8 Nm

Connect the DC-plug of the PV module to the inverter.The plugs are coded to prevent confusion. Make sure that the plugs engage with a clicking sound.

Figure 6 I screw the inverter onto the SOLAR-HOOK mounting bracket

View of a ready-prepared photovoltaic module for a balcony power plant with the Solar-Hook mounting bracket and the inverter.

Figure 7/prepared solar module with 3 SOLAR-HOOK mounting brackets and inverter

14 Fit special clamps on vertical round bars

Distribute the 3 special clamps **Typ_R** evenly (on the right, on the left, in the centre) over the 180 cm rail length and mark the 3 corresponding round bars of the balcony railing.

Put the V2A arch around the round bar and press the two open wings together. The V2A arch is only slightly bent at the factory to specify the direction of the bend.

Figure 8a/V2A fixing the V2A arch

Open the screw of the special clamp far enough to fit over the vertical round bar with the V2A arch and position the special clamp as shown in the illustration.

Wet the screw thread with screw locking lacquer and thighten the screws alternately until they clamp the V2A arch

Thightening moment 10 Nm.

For **rectangular vertical** balcony rails, use the corresponding rectangular special clamps **Typ_E** the V2A arch is omitted here.

Figure 8b/special clamp on rectangular balcony rod

Figure 9/special clamp type_E and type_R with V2A arch

15 Mounting the rail to the special clamps

Slip the mounting rail onto the 3 stud bolts of the special clamps and fix them with the nuts (SW18). Make sure that the projection of the mounting rail on the right and left has the same distance to the special clamps.Then tighten the nuts with the SW18 socket.

Caution: The mounting rails may have sharp edges. Wear work gloves!

Figure 10/ mounting rail fixed on special clamp from inside

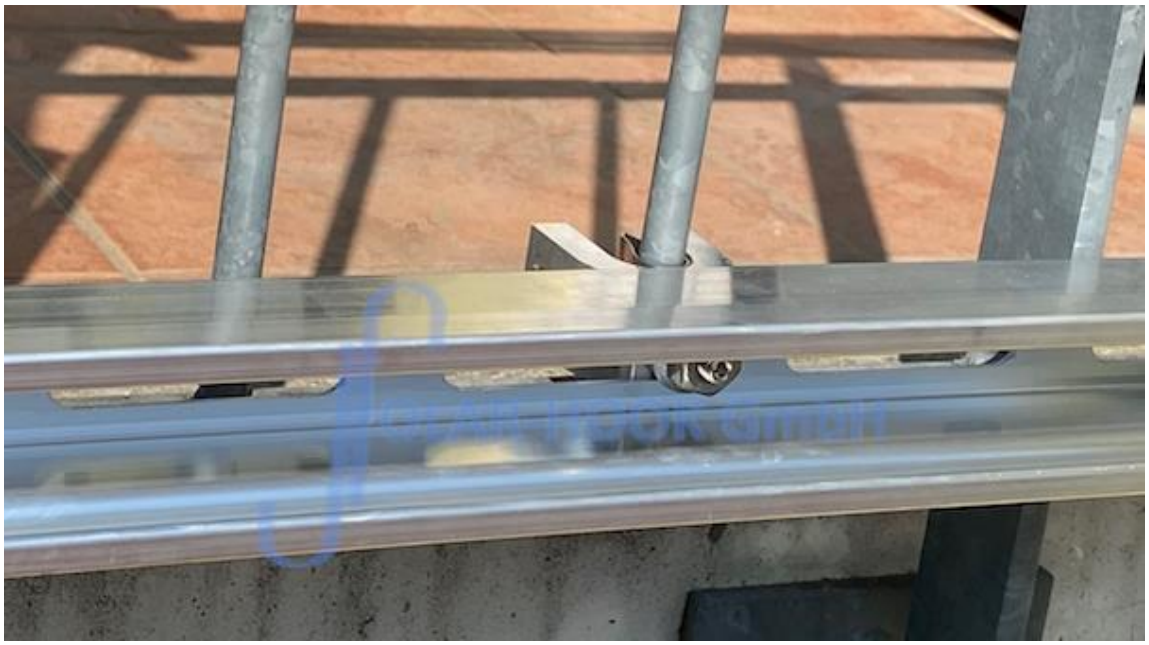


Figure 11/mounting rail and special clamp from outside

Make sure that the clamping range of the PV module is observed. This range is shown on the module data sheet and/or the installation manual of your photovoltaic module

16 Fixing the PV module to the balcony railing and mounting rail

With the help of a second person, lift the module over the railing and temporarily place it on the mounting rail for reliefing the load. Now, change your grip so that you can hang the module on the SOLAR-HOOKs in the handrail on the balcony railing.

Push one preassembled module end clamp each into the rail and right up to the module on the right and left. Align the module and screw the clamps toghether with the rubber-backed insertion profile (see Fig. 12 and 14) unsing the SW8 socket. To align the module, please lift it slightly. Do not slide along the along the handrail, otherwise the weight and friction may damage the protective rubber.

end clamp tightening torque 10 NM

Figure 12/attach module end clamp on the right and on the left

Attention! On the right and on the left of the solar module you need a gap of 20mm to fix the module end clamps safe. The maximum length of the solar module is 1760 mm to fit to 1800mm mounting rail.

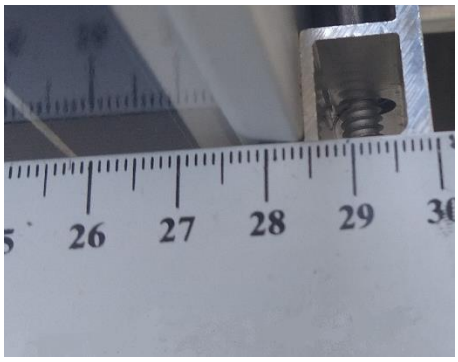
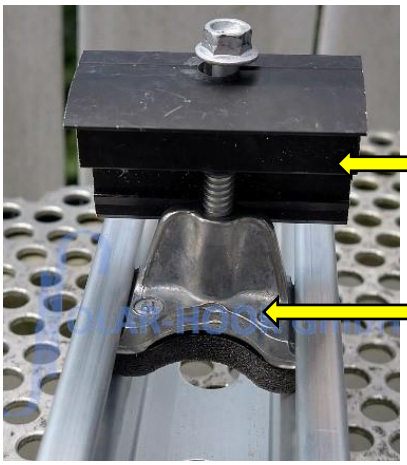


Figure 13/Attach module middle clamp



module end clamp – must fit flat and straight to the solar module – if necessary move and adjust until it fits..

bottom part (slide-in profile)

Figure 14/pre-assembled module clamp with slide-in profile

Underneath the handrail, now insert the long M6 x 65mm screws through the slotted holes of the SOLAR-HOOK and fix it with the nut. Make sure that the thread of the screw protrudes at least 5mm beyond the nut.

Figure 15/double securing of the SOLAR-HOOK mounting bracket

Fnally, thighten the short screws, which you had loosely fixed the mounting bracket with the module frame according to section 11, figure 5.

Thigtening torque 10 Nm

picture 16/tightening the short screws

17 Mounted PV module with SOLAR-HOOK mounting system

and inverter from the inside and outside.

Figure17/view from inside the balcony

Figure 18/view from outside

18 Technical information of the materials used

- SOLAR-HOOK mounting bracket according to DIN EN 1090-2 made of stainless steel 1.4301/1.4307 according to DIN EN 1008-4 (A2)
- Truss-head screws with collar and force grip hexagon socket ISK 4 M6x16 und M6x65 made of A2-070 according to DIN EN ISO 7380-2
- Truss-head bolts with collar and force grip hexagon socket TX30 M6x16 and M6x65 made of A2-070 according to DIN 34805-2
- Hexagon nuts with flange and plastic clamping element M6 made of A2-70 accord ing to DIN 6926 or DIN EN 1663:1998-02
- Hexagon nuts with flange M6 of A2-70 according to DIN 6923 or DIN EN 1661:1998-02
- Washers DIN 9021 A2 140 HV 6,4

19 Labeling

The bended SOLAR-HOOK mounting bracket is manufactured in accordance with DIN EN 1090-2.

Figure 20/Ü-labeling