mounting system for corrugated roof
for solar panels in portrait setup
(cross-system)
TABLE OF CONTENT

1. Introduction          1
2. General installation conditions                                                                        1
3. Product description                                                                                           3
4. Parts overview                                                                                              3
4.1 Exploded-view                                                                                               3
4.2 Bill of materials                                                                                         4
5. Mounting preparation                                                                                         5
5.1 Monitoring tools and accessories                                             5
5.2 Determining position of solar panels and measuring                                           6
5.3 Cleaning roof                                                                                  6
6. Installation          7
6.1 Preinstalling suspension sockets onto solar panels                                    7
6.2 Preinstall connecting strips                                                                     7
6.3 Attaching hanger bolts                                                              8
6.4 Attaching vertical mounting rail                                                                        9
6.5 Attaching horizontal mounting rail                                                                        10
6.6 Hanging solar panels to mounting rail                                                               11
6.7 Mounting 1st solar panel on mounting rail                                           12
6.8 Mounting other solar panels on mounting rail                                      13
6.9 Final assembly / multiple rows under each other                                        14
7. Annex           15

THIS INSTALLATION MANUAL SHOULD BE RETAINED WELL FOR FUTURE REFERENCE!
For the duration and conditions regarding warranty we recommend contacting your dealer. Furthermore, we refer to our General Terms and Conditions of the sale which are available on request.
The manufacturer declines all responsibility for damage or injury resulting from failure to strictly follow this installation manual and failure to observe normal caution in handling, installation and use of the ClickFit mounting system.
As a result of constant efforts to improve it may happen that the product differs in detail from what is described in this manual. For this reason the given instructions serve only as a guideline for installing the product mentioned in this manual.
This manual has been prepared with all due care, but the manufacturer can not be held responsible for any errors in this manual or the consequences thereof.
In addition, all rights are reserved and nothin may be reproduced from this manual in any way.
1. Introduction

This manual describes the installation of the ClickFit mounting system comprising of a double layer cross-cross arrangement for a corrugated roof. (for solar panels in portrait setup)

Read the manual carefully so you are fully informed of the contents of the manual. Follow the instructions in the manual carefully. Perform the operations in the correct order.

Keep the manual in a safe and dry place. Should the manual get lost then there is the possibility to request a new one from Esdec BV.

2. General installation conditions

In general

Non-compliance with the requirements mentioned in this document may result in invalidation of all warranty and product liability claims.

The data, comments and opinions in this document are binding and must be checked for completeness and timeliness.

Esdec BV reserves the right to modify this document without notice.

Stability and condition of the roof

The roof should be in good condition and strong enough to bear the weight of the solar panels incl. the additional materials, wind and snow loads. Check the stability of the roof and adjust the roof / construction where necessary, in in doubt contact a manufacturer. Ensure that the load reserve of the roof is exceeded not locally or in its entirety.

Safety Warnings

- Before starting the installation, you should be informed of which material the corrugated iron is manufactured. If the concerned corrugated iron is contains asbestos, we refer to the law and regulations concerning working with asbestos containing materials.
- The installation of the ClickFit mounting system should standard be performed by qualified technical personnel (at least 2 skilled people).
- Adding or removing parts may have an adverse effect on the functioning and is not advised!
- For placement of the solar panels the roof should be clean, dry, flat and free from algae etc.
- Avoid mounting with strong winds and a slippery wet roof surface.
- Work on a pitched roof always with fall protection, and if necessary with safety nets and edge protection.
- Wear shoes with reinforced toe and sturdy non-slip soles.
- Always wear proper protective clothing when performing the work.
- Always use a lifting aid / lift installation when moving the equipment (solar panels, etc.)
- Always place a ladder on a firm stable surface.
- Always place the ladder at an angle of about 75° and leave it sticking out about 1m above the roof edge.
- If possible, secure the ladder to the top with a rope or strap.
- Preferably work according to manual “work safely on roofs”.

Scope ClickFit

- Wind zone (1 t/m 3)
- Roof height (3-9m) When your roof is higher you should contact your supplier.
- Type of roofing: Corrugated iron
- Roof pitch: Between 15 - 60 degrees (35 degrees is best)

Edge zone

The distance from the solar panels to the ridge and gutter should be at least 30 cm due the wind load.
The distance from solar panels to the side of the roof should be at least 30 cm. There shouldn’t be solar panels in this area, in its entirety nor in part.

Dimensioning

All dimensions and sizes are in cm unless stated otherwise.
Standards, requirement and regulations
Upon installation of the mounting system, it is important to follow the installation instructions and the related standards for the prevention of accidents. In particular, observe the following standards, requirements and regulations:

- Building Decree Construction
- PPE Personal Protective Equipment
- KEMA Testing of Electrotechnical Materials
- DIN 1055 Design loads for buildings
- DIN 18299 General rules for all construction sectors
- DIN 18451 Scaffolds

Removal and disassembly
Remove the product according to local laws and regulations.

Warranty
Warranty according to warranty conditions and terms of Esdec BV. These can be found on the website www.esdec.nl

Liability
The manufacturer accepts no liability for damage or injury caused by not (strictly) observing the safety regulations and instructions in this manual or by carelessness during installation of the product described in this document and any related accessories.

- subject to misprints
3. Product Description

The ClickFit mounting system consists of mounting brackets, mounting rails (double-layer cross-cross arranged) and the necessary installation materials to mount the solar panels in portrait setup on the roof. The ClickFit mounting system for corrugated iron can be used for all types of corrugated roofing, including the common fiber cement steel and corrugated iron.

Mounting system
The vertical mounting rails are secured to the roof structure by means of hanger bolts. The horizontal mounting rails are mounted cross-cross arranged onto the vertical mounting rails. Height differences in the roof can easily be taken care of by means of the adjustment of the hanger bolts. At the location of the hanger bolt EPDM rubber seal is used as a water barrier.

Attachment of the mounting rails
The vertical mounting rails are attached to the hanger bolts using a M8 screw connection. The horizontal mounting rail is mounted onto the vertical mounting rails using cross connectors and mounting screws.

Attachment of the panels
The solar panels are attached by means of universal module clamping plates, end clamps and mounting screws. The mounting screws are screwed directly to the mounting rail in which is a special thread is installed.

4. Parts overview

4.1 Exploded-view
4.2 Bill of materials

1. Solar panel

2. RVS Hex bolt M6 x 20
   Article nr: 100-0620

3. Nylon suspension socket
   Article nr: 100-9001

4. RVS Hexagon nut M6
   Article nr: 100-0600

5. Mounting rail
   Article nr: 100-1001

6. Connection strip pro
   Article nr: 100-3040

6A. Mounting screw 6,5 x 19
   Article nr: 100-6519

7. RVS Hex bolt M8 x 20
   Article nr: 100-0820

8. RVS Hex flange bolt M8
   Article nr: 100-0721

9. Hanger bolt M10x200
   Article nr: 100-3101

   Hanger bolt M10x250 (optional)
   Article nr: 100-3110

   Hanger bolt M10x300 (optional)
   Article nr: 100-3103

   Hanger bolt for steel M10x160 (optional)
   Article nr: 100-3107

10. Cross connector
    Article nr: 100-2080

11. Mounting screw 6,5 x 32
    Article nr: 100-6532

12. End clamp

   End clamp CFA
   Article nr: 100-3003

   End clamp CFB
   Article nr: 100-3004
   For type see annex ch. 7

12A. End clamp Black (optional)

   End clamp CFA Black
   Article nr: 100-3950

   End clamp CFB Black
   Article nr: 100-3951
   For type see annex ch. 7

13. Mounting screw 6,5 x __
    Article nr: 100-65__
    For type see annex ch. 7

14. Module clamping plate
    Article nr: 100-3020

14A. Module clamping plate
     Black (optional)
     Article nr: 100-3952

15. End cap Black (optional)
    Article nr: 100-3030

16. Color cap Black (optional)
    Article nr: 100-6500
5. Mounting preparation

5.1 Monitoring tools and accessories

Here is a list of necessary tools / utilities:

- Measuring tape
- Brush
- Ratchet with hex cap
- Cordless Screwdriver
  
- Scaffold or stable safe ladder
- Wrench (2x)
- Marker / chalk
- S15 / S10 / S13

or

- S7 / S10
5.2 Determining position of solar panels and measuring

In the determination of the position of the solar panels on the sloping roof, it is very important to pay attention to the sunlight coming in throughout the day and throughout the year. Place the solar panels on a roof surface which has no shadow. Shadow of a chimney, dormer, trees and nearby buildings have an adverse effect on the amount of energy generated by the solar panels.

Measuring and marking

For the placing of the solar panel (in portrait setup), you need approximately an area of 160x80 cm or 160x100 cm or 200x100 cm per panel. (depending on the type of solar panel)

Make sure that on the roof around the solar panels 30 cm is kept free. or 30 cm from the ridge and the gutter and 30 cm from the sides in connection with wind load.

Mark the contours of the panel field on corrugated iron with chalk or a marker. Mark the lines mark where the vertical mounting rails are coming and where the hanger bolts must be placed. Mark the lines where the horizontal mounting rails are coming (on 1 / 4th of the top panel and bottom panel).

5.3 Cleaning roof

Clean the corrugated iron with a brush.

Remove algae, moss, etc. to reduce imperfections to a minimum during installation!
6. Installation

6.1 Preinstalling suspension sockets onto solar panels
Install per solar panel 2 suspension sockets at the rear of the solar panel (= same side as the connection box). First insert the RVS hex bolts M6x20 in the available holes in the frame and affix thereon the suspension sockets. Then install the M6 nuts. The suspension sockets serve as mounting aid in placing the solar panels.

6.2 Preinstall connecting strips
You can attach the mounting rails to each other with the supplied connection strips. Slide the upper connection strip into the side of the mounting rail and slide 2 hex bolts M8 x 20 with the head into the mounting rails. Install the upper connection strip with 2 mounting screws 6,5x19 (tightening torque 4,5Nm). Place the bottom connection strip onto the underside of the mounting rail over the hex bolts M8 x 20 and place the hex flange bolt M8 (tightening torque 16,3Nm).
6.3 Attaching hanger bolts

On the basis of the position of the solar panels on the roof, you determine the position of the hanger bolts. Divide the hanger bolts equally in the line where the vertical mounting rails comes. The hanger bolts may be placed up to 1.5 m apart. (See calculator for distance) Ensure that the hanger bolts are always attached in the curvature of the corrugated iron and in a girder.

Draw with chalk or marker the place down on the corrugated iron roof where the hanger bolts should come. (on the spot of purlin) Install the hanger bolt on the curvature of the corrugated iron. Preferably use the screw hole with which the corrugated iron is screwed to the purlin. Remove this screw and place the hanger bolt into the screw hole. If the existing screw hole cannot be used because it is in the wrong place then a new hole must be drilled at the desired location in the corrugated iron on the curvature. Use a drill bit of 12.5mm, then pre-drill the prulin with a long drill 5mm *.

Then screw the hanger bolt into the purlin (possibly with electric percussion rattle). Make sure the hanger bolt is drilled deep enough (at least 5cm) and straight into the girder. Now tighten the nut above the rubber seal until the rubber deforms and the screw hole is properly sealed. Make sure that the hanger bolts are mutually aligned.

* When applying the hanger bolt M12 the hole must be 14.5 mm into the corrugated iron and the purlin must be pre-drilled with a drill bit of 7 mm long.

** When applying the hanger bolt for steel purlins, the purlin must be pre-drilled using the table in the annex on page 13.
6.4 Attaching vertical mounting rails

1. Disassemble the hex bolts M8x20 of the hanger bolts and slide them with the head into the mounting rails.
2. Make sure that the end of the mounting rails protrudes min. 5 cm compared to the last hanger bolt and place the mounting rail with hexagon bolts M8x20 onto the hanger bolts.
3. Then screw the mounting rail to the hanger bolts using hex flange bolts M8. Make sure these are tight properly. (tightening torque 16.3Nm)
4. Make sure that the mounting rail and the hanger bolts are well aligned in comparison with each other and that the mounting rail is properly positioned on the hanger bolts. Height differences in the roof can easily be taken care of by means of the adjustment of the mounting plate in the hanger bolt.

Make sure the vertical mounting rails are next to each other in connection with the alignment of the solar panels!
6.5 Attaching horizontal mounting rails

1. Decide the positions on the vertical mounting rails where the horizontal mounting rails (incl. cross connectors) should come. The horizontal mounting rails are attached at 1/4 H of the top-panel and panel-mounted bottom edge, or a mutual distance of 2/4 H. Mark the positions on the vertical mounting rails with chalk or marker.

2. Place the horizontal mounting rails onto the vertical mounting rails at the spot of the marked positions.

3. Place the cross connectors onto the vertical mounting rails and slide it properly against the horizontal mounting rails.

4. Screw the cross connectors onto the vertical mounting rails using mounting screws 6,5x32 (tightening torque 4,5Nm). Ensure the horizontal mounting rails (incl. cross connectors) are aligned in comparison with each other.

5. Height differences in the roof can easily be taken care of by means of the adjustment of the mounting plate in the hanger bolt.

Make sure the vertical mounting rails are next under each other in connection with the alignment of the solar panels!
6.6 Hanging solar panels to mounting rail

Temporarily hang the first solar panel using the preinstalled suspension sockets to the upper mounting rail. This will keep your hands free for the rest of the installation.
6.7 Mounting 1st solar panel on mounting rail

Slide the first solar panel to the side of the mounting rail. Then slide the end clamp onto the mounting rail. Choose the correct recess so that the end clamp connects to the solar panel. Leave about 1 cm rail visible protrude next to the end clamp. Then screw the end clamp tight using the mounting screw. The tightening torque of the screw connections is 4.5 Nm.

Option: Slide the black end caps in the side of the mounting rails and place the color caps onto the mounting screws.
6.8 Mounting other solar panels on mounting rails

Hang the second solar panel on the horizontal mounting rail and slide it towards the first, until a gap remains of about 7mm. Then screw the mounting screw with a module clamping plate module into the mounting rail. The tightening torque of the screw connections is 4.5Nm.

Make sure the solar panels are aligned before you tighten the screw! Repeat this with the remaining solar panels. Option: Place the black color caps over the mounting screws.
6.9 Final assembly / multiple rows under each other

Slide the end clamp onto the mounting rail. Choose the correct recess so that the end clamp connects to the solar panel.
2. Then tighten the end clamp with the mounting screw (tightening torque 4.5Nm).
3. To obtain an interconnected panel surface you slide the underlying solar panels after you hung them with the suspension sockets onto the mounting rail against the upper row of solar panels with a gap of 1-2 cm. Then you secure the solar panels firmly using the mounting screws, end clamps and module clamping plates to the mounting rails.
Option: Slide the black end caps in the side of the mounting rails and place the color caps onto the mounting screws.
### 7. ANNEX

<table>
<thead>
<tr>
<th>Frame height</th>
<th>End clamp</th>
<th>Screw length</th>
</tr>
</thead>
<tbody>
<tr>
<td>29mm</td>
<td>CFA</td>
<td>55 mm</td>
</tr>
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<td>CFA</td>
<td>55 mm</td>
</tr>
<tr>
<td>31mm</td>
<td>CFB</td>
<td>55 mm</td>
</tr>
<tr>
<td>32 mm</td>
<td>CFB</td>
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</tr>
<tr>
<td>33 mm</td>
<td>CFA</td>
<td>60 mm</td>
</tr>
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<td>CFA</td>
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</tr>
<tr>
<td>35 mm</td>
<td>CFB</td>
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</tr>
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</tr>
<tr>
<td>48 mm</td>
<td>CFB</td>
<td>75 mm</td>
</tr>
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<td>CFA</td>
<td>75 mm</td>
</tr>
<tr>
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<td>CFA</td>
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</tr>
<tr>
<td>51 mm</td>
<td>CFB</td>
<td>75 mm</td>
</tr>
<tr>
<td>52 mm</td>
<td>CFB</td>
<td>75 mm</td>
</tr>
</tbody>
</table>

**Pre-drilling steel purlins**

When applying the hanger bolt for steel purlins, the purlin must be pre-drilled using the table in the following table:

<table>
<thead>
<tr>
<th>Thickness purlin</th>
<th>Drill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,5 - 5,0mm</td>
<td>6,5mm</td>
</tr>
<tr>
<td>5,1 - 6,0mm</td>
<td>7,0mm</td>
</tr>
<tr>
<td>6,1 - 10,0mm</td>
<td>7,5mm</td>
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