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Installation manual
WallFix

IBC SOLAR AG

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1. Introduction

Dear customer,

Congratulations, you have chosen an IBC product! Now you can enjoy the quality and reliability of the IBC WallFix module mounting system.

To ensure that you can install and start up your IBC WallFix module mounting system quickly and simply we have enclosed detailed assembly instructions. They should help you to quickly become familiar with the assembly of the bracket and the modules.

Please read these instructions carefully before installation. If you still have questions after reading them, please contact your IBC partner, who will be happy to assist you.

We wish you a sunny day!

Your team

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2. Tool list

- Power drill or cordless screwdriver with wrench socket, a variety of bits (TX 40, Nut with wrench size SW8 and SW10, HEX6) and torque control
- Impact drill with twist drill bit or, if necessary, an impact drill bit (Ø 10 mm)
- Pencil
- Tape measure
- Folding rule
- Guideline
- Plumb line
- If necessary straightedge
- Line laser or, if necessary, cross-line laser
- Torx screwdriver with T-grip, size (SW8, SW10, TX40, HEX6)
- Torque wrench
- Assembly gloves

3. General information, standards and regulations

The IBC WallFix mounting system is is used for installing your solar modules.

The number of components varies according to the size of the system.

ⓘ Important information:

- Your IBC WallFix mounting system will be delivered complete with all accessories!
- Before you begin, please check that all parts are included by using the attached packing list and parts list.
- Electrical work must be carried out by a qualified electrician!
- Installation must be performed exclusively by qualified personnel.
- The installation guidelines and, in specific cases, the specific instructions provided by the respective manufacturer of the facade—depending on the substrate (e.g., masonry, reinforced concrete, etc.) and the modules—must be followed! We advise the use of gloves to avoid injuries.
- During the entire assembly time, it must be ensured that at least one copy of the current installation manual is available on the construction site.
- Coated or anodized components may have visual defects due to packaging, transport or manufacturing.

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ⓘ Other important information and dimensioning standards

The entire PV system must be mounted according to the generally recognized technical regulations. Please ensure that you observe the national accident prevention regulations e.g. of the German employer‘s liability insurance associations (Berufsgenossenschaften), in particular:

- DGUV Regulation 1 Principles of Preventation
- DGUV Regulation 3 Electrical installations and equipment
- DGUV Regulation 38 Construction work
- DGUV Information 208-016 the use of ladders and steps
- DGUV Information 203-085 Working Under the Sun

Please observe all regulations and guidelines under public law during planning, erection, operation and maintenance of grid-connected PV plants including the following: EN standards, DIN standards, TAB, accident prevention regulations, the guidelines from the association of property insurers (VDS – fire protection guidelines), the professional guidelines of the roofing association and general guidelines (e.g. timber structures, roofing and roof-sealing works).Please note in particular (this is not an exhaustive list):

- DIN / VDE 0100, particularly part 712 (erection of power installations with nominal voltage up to 1000 V)
- DIN / VDE 0298 (electric cables)
- DIN / VDE 0126 (solar energy systems for domestic use)
- DIN 18015 Planning and erection of electrical installations in residential buildings
- DIN 18451 Scaffolding work
- DIN 18516 Cladding for external walls, ventilated at rear. Part 1, Requirements, principles of testing TAB (Technische Abschlussbestimmungen für den Anschluss an das Niederspannungsnetz der Energieversorgungsunternehmen)
- VDEW guidelines (guidelines for connection and parallel operation of decentralised power generation in the low-voltage grid)
- Notes on solar from the German Institute of Civil Engineering (DIBt), in the current edition
- DIBt building regulation list, in the current edition
- DIN 4102-1: Brandverhalten von Baustoffen und Bauteilen – Teil 1: Baustoffe; Begriffe, Anforderungen und Prüfung
- DIN EN 13501-1:2010-01 Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests; German version
- EN 1990 (Basis of structural design)
- EN 1991-1-4 (General actions – wind loads)

- EN 1992-1-1 General rules and rules for buildings, bridges and civil engineering structures
- EN 1993-1-1 Design of steel structures: General rules and rules for buildings
- EN 1995-1-1 Design of timber structures
- EN 1996-1-1 Design of masonry structures - Part 1-1: General rules for reinforced and unreinforced masonry structures
- EN 1999-1-1 Design of aluminum structures
- General certificate of building approval Z-30.3-6: Products, connecting devices and structural components made from stainless steel
- DIN 4426 Equipment for building maintenance - Safety requirements for workplaces and accesses - Design and construction
- DGUV Information 203-080 - Installation and maintenance of PV systems
- Model Building Regulation (MBO) / state building regulations

Solar modules

Always ensure that the back of the modules does not come into contact with foreign objects or building components—especially when the modules are subjected to mechanical stress.
Only modules that are approved for use on the facade may be used!

Framed solar modules may only be used if they fulfill the following criteria:

- Modules with abZ or ETA
- Hold valid IEC 61215 / IEC 61646 and protection class II / IEC 61730

Please note that the guarantee for the solar modules will expire if modifications are made to the module frames (e.g. by drilling additional holes). For warranty reasons, the assembly instructions from the respective solar module manufacturer must be strictly adhered to.

Lightning and surge protection

Please note that the lightning and surge protection of the PV system is to meet the current requirements for

- DIN / VDE 0185 part 1 to 4,
- DIN / VDE 0100 part 712 and
- VdS 2010

For more detailed information please refer to the local regulations and the aforementioned standards and guidelines.

In general we recommend that you integrate the assembly system and the module frames into the local potential equalisation and use surge protection devices.

Potential equalisation is always necessary if the used solar modules do not meet requirements for protection class II and/or transformerless inverters are used.

The cross-section of the potential equalisation conductor must correspond to the main DC cables but must be at least equivalent 6 mm² (copper).

If the building has a lightning protection system and the PV generator is not in the protection area of the arresting device, then the module frame and assembly system must be integrated into the external lightning protection and surge protection devices must also be installed.

The electroconductive connection must be implemented with at least equivalent 16 mm² (copper).

Cable routing

Even when you are installing the frame, certain points regarding cable routing and wiring should be kept in mind.

- To avoid surge voltage couplings from lightning strikes, the resulting conductor loop must be kept as small as possible.
- Water must not be allowed to collect around the wiring, continuous water drainage must be provided.
- The wires must be installed with maximum possible UV and weather protection.
- Care must be taken to ensure that the cables are strain-relieved.

Dimensioning

The design and sizing of our WallFix mounting system are performed using our in-house PV-Manager software, which helps determine the load factor and thus the suitability of the mounting components. The software serves as a planning aid. It does not replace a verifiable structural analysis.

If you do not have the PV Manager available for PV plant dimensioning, please contact your responsible sales representative to determine and dimension the mounting system.

⚠ Attention!

The structural analysis of the wall assemblies is not part of the structural analysis conducted as part of the design of the PV substructures. The increased loads and load redistributions resulting from the photovoltaic system must be reviewed and approved by a structural engineer retained by the client.

Drilling Methods

Drilling must be performed according to the type of substrate; for example, use rotary drilling for perforated bricks and hammer drilling for concrete.

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4. Installation of Various Mounting Systems

4.1 Installation of the Insertion System

4.1.1 Insertion System for insulated solid walls

Suitable for the following materials:
Standard concrete, solid bricks, masonry, hollow block/perforated brick masonry, lightweight concrete, aerated concrete

Installation on insulated facades is carried out using a top-hat rail and Reisser screws, which prevents the insulation from being pushed in. The insert system is mounted directly onto the top-hat rail using cross-recessed screws. As a result, this system does not require an anti-slip device.

To better illustrate the geometry, the system is shown in gray; the system is shipped is black.

ⓘ Important information:

- The modules can be mounted in portrait or landscape orientation
- Measure the module's dimensions directly on the module itself; adjust the distance of the Mounting Rail if necessary!
- Follow the installation instructions for the REISSER RDS Spacer screw

Item Number	Description	Clamping range (Ventilation gap + insulation thickness + plaster thickness) [mm]
6901200007	Spacer Screw RDS-CA A4 10,0 x 150mm	45 - 70
6901200008	Spacer Screw RDS-CA A4 10,0 x 190mm	85 - 110
6901200009	Spacer Screw RDS-CA A4 10,0 x 210mm	105 - 130
6901200010	Spacer Screw RDS-CA A4 10,0 x 230mm	125 - 150
6901200011	Spacer Screw RDS-CA A4 10,0 x 250mm	145 - 170
6901200012	Spacer Screw RDS-CA A4 10,0 x 270mm	165 - 190
6901200013	Spacer Screw RDS-CA A4 10,0 x 290mm	185 - 210
6901200014	Spacer Screw RDS-CA A4 10,0 x 310mm	205 - 230
6901200015	Spacer Screw RDS-CA A4 10,0 x 330mm	225 - 250
6901200016	Spacer Screw RDS-CA A4 10,0 x 350mm	245 - 270
6901200017	Spacer Screw RDS-CA A4 10,0 x 370mm	265 - 290

Table 1: Overview of Spacer Screws

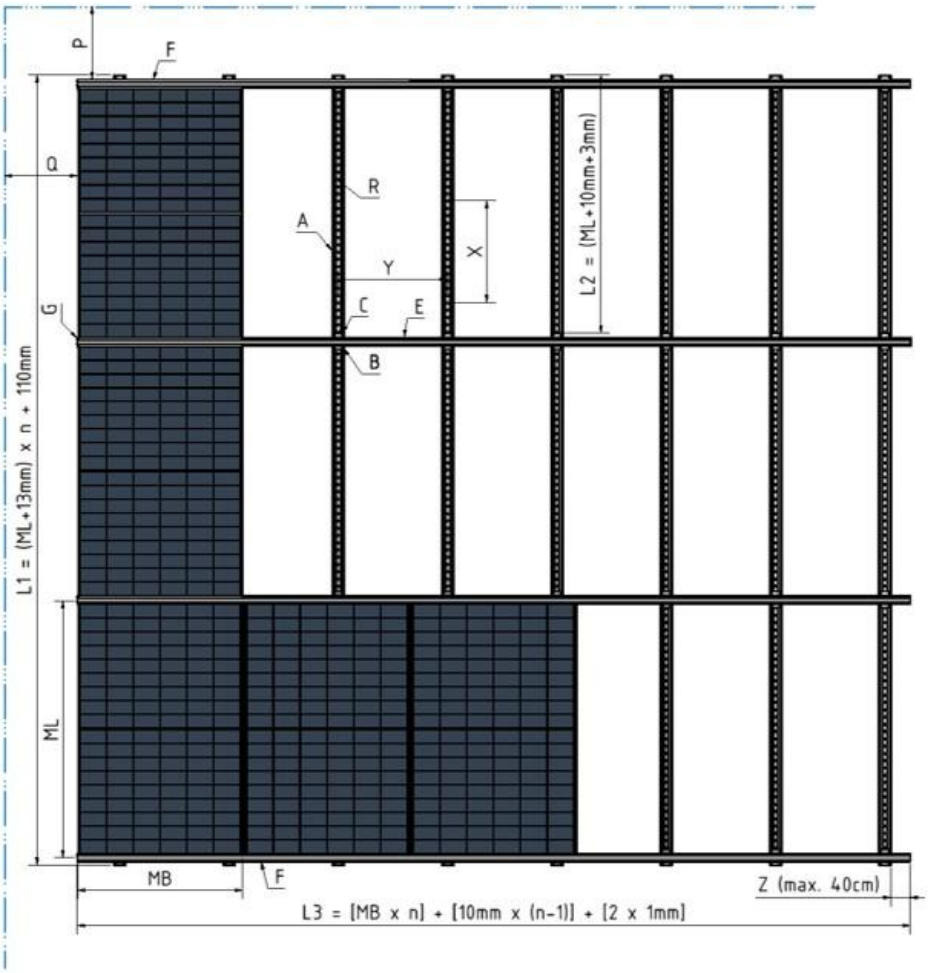


Figure 1: Installation Diagram for an Insertion System for Insulated Solid Walls

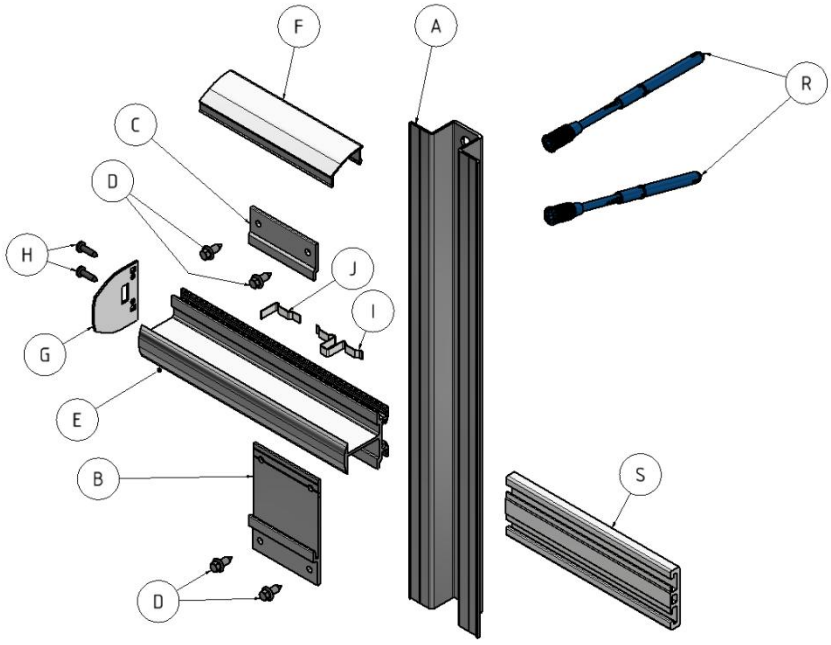


Figure 2: Explotion view of an Insertion System with a Spacer screw

	Description
L1 = (ML + 13 mm) × n + 110 mm	Length of the Mounting Rail
L2 = (ML + 13mm)	Distance between the Facade Connector lower part (Assembly dimensions)
L3 = [MB × n] + [10mm × (n-1)] + 2mm	Length of the Insertion Rail 30 / Insertion Rail 35
MB	Module width
ML	Module length
n	Number of modules
A	Mounting Rail (Support Profile)
B	Facade Connector lower part
C	Facade Connector upper part
D	Cross-connected screw 5,5x20 A4
E	Insertion Rail 30 / Insertion Rail 35
F	End Cover 30 / End Cover 35
G	Side Plate 30 / Side Plate 35
H	Tapping Screw SW8 4,8x19 black
I	Infield Spacer
J	Edge Spacer
R	Spacer Screw RDS-CA A4 (Reisser)
S	Butt Connector Insertion Rail 30/35 black
P	Distance from the edge of the building to the module array (vertical)
Q	Distance from the edge of the building to the module array (horizontal)
X	Spacing of the Reisser mounting points as specified
Y	Spacing of the Mounting Rails as specified
Z	Maximum overhang of the Insertion Rail

Table 2: Legend for Figures 1 and 2

ⓘ When installing the modules in landscape orientation, switch “ML” and “MB.”

Step 1: Apply wall markings for installation

- **Positioning the Module Array**
  First, the location of the module array is determined; to do this, the dimensions “P” and “Q” must be taken into account. (See Figure 1)

- **Determining the distances**
  The vertical spacing of the Mounting Rails must be determined in accordance with the structural design specifications.

- **Marking the positions**
  The determined positions of the Mounting Rails must be clearly and visibly marked on the wall. It is imperative to follow the predetermined spacing thoroughly.

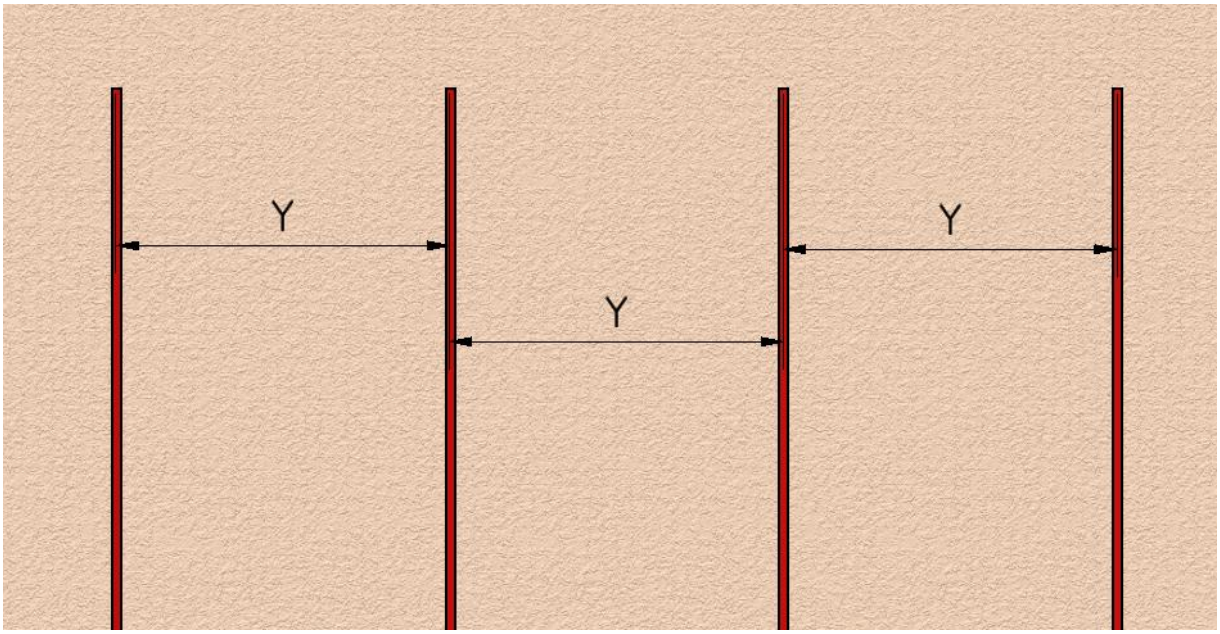


Figure 3: Marking the Mounting Rail positions based on the static design

Step 2: Drilling the first holes to align the Mounting Rail

- **Positioning of the first drill holes**
  First, determine the top and bottom mounting positions on each Mounting Rail.
  Drill a hole perpendicular to the wall surface at each of these positions.
  When installing additional Mounting Rails vertically, the maximum distance between them must not exceed 5 cm.
  This space supports no installation of Facade Connectors.

- **Drilling the holes**
  The drill holes must be drilled properly in accordance with the intended fasteners. Ensure that the holes are precisely aligned and plumb; use a drilling template if necessary. The drilling depth must be at least 105 mm.

- **Preparing the drill hole**
  The drilled holes must be properly blown out and prepared before further assembly to ensure optimal anchoring.

- **Be aware of the seating depth**
  The required drilling depth of 70 mm is mandatory according to the technical specifications.

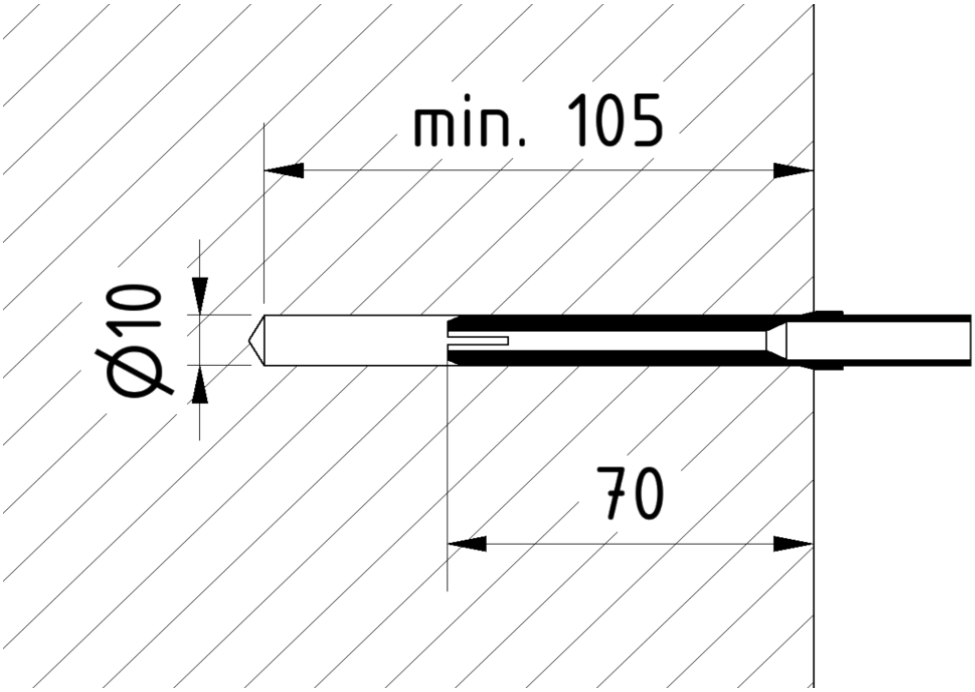


Figure 4: Hole made with a dowel

Step 3: Aligning the Mounting Rail

- **Installing of the Mounting Rails**
  Place the Mounting Rail in the designated position and align it.

- **Mounting points at the top and bottom**
  The Mounting Rail must be secured at the top and bottom with a Reisser spacer screw at each end. When installing the rail and inserting the spacer screws, the manufacturer's (Reisser) specifications must be strictly followed, particularly regarding installation depth, spacing, and installation procedure. The threaded portion of the screw must be positioned within the last third of the Mounting Rail. The screw head must not come into contact with the rail, as this poses a risk of shifting the profile's position and weakening its fixation in the aluminum.

- **Aligning of the Mounting Rails**
  The Mounting Rails must be aligned with each other to create a continuous, vertical, level mounting surface.
  The Mounting Rail can also be easily realigned later. By unscrewing the 0° screw, the profile can be readjusted at any time, and the screw can then be tightened again. The final position should be achieved before the 15° screws are tightened. The screw allows for compensation of up to 25 mm; the marked area on the screw serves as a guide for this purpose.

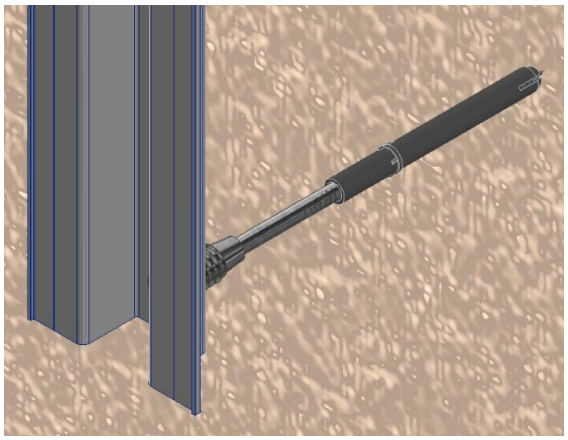


Figure 5: Lower end of the Mounting Rail

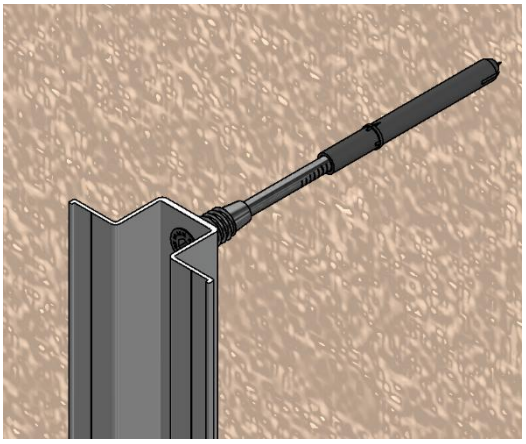


Figure 6: Upper end of the Mounting Rail

Step 4: Complete installation of the Mounting Rail

- **Installing the remaining spacer screws**
  When installing the spacer screws, the manufacturer's (Reisser) specifications must be strictly followed. This includes, in particular, the requirements for installation, angle, spacing, and insertion depth.

- **Adding additional mounting points**
  The remaining mounting points are to be installed at the designated locations as specified in Reisser's report.
  The additional drill holes are to be drilled at ±15° or 0° as specified in Reisser's report. The drilling template (Item No.: 6700200073) must be used to ensure precise execution.

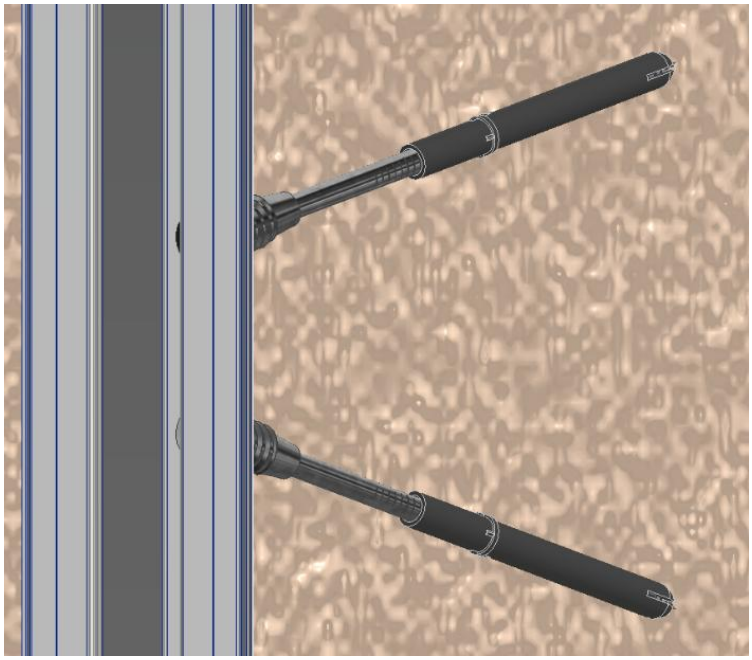


Figure 7: Mounting Rail with screws angled at ±15°

Step 5: Installation Facade Connector lower part

- **Preparing for Installation**
  Before beginning installation, make sure that the contact surfaces of the Mounting Rail and the Facade Connector are free of dirt and debris.

- **Mounting Facade Connector lower parts**
  In the first step, install only the Facade Connector lower part at the beginning and end of each Insertion Rail 30/35. (See Figure 8) Make sure that the outer edge of the lower section of the Facade Connector does not protrude beyond the Mounting Rail.

- **Installating of the Facade Connectors**
  The Facade Connector lower parts must each be properly secured to the Mounting Rail using two Cross-connected screw. Ensure that they are securely and correctly seated. No shavings should be trapped between the contact surfaces of the Mounting Rail and the Facade Connector lower part, as this will compromise the fit and the quality of the fastening. (See Figure 9)

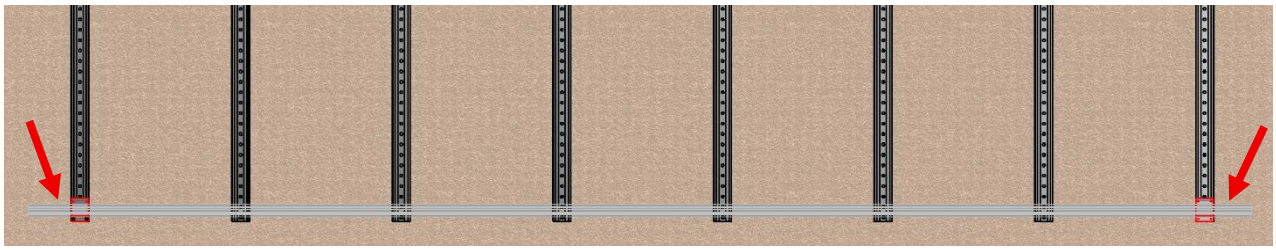


Figure 8: Installation of the outside Facade Connectors for each mounting rail

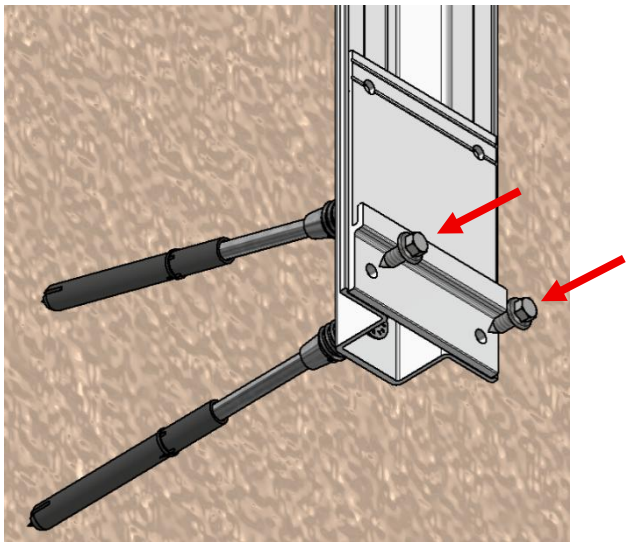


Figure 9: Installation of the Facade Connector lower part

Step 6: Installation of the first Insertion Rail

- **Inserting the first Insertion Rail**
  The Insertion Rail must be inserted into the installed Facade Connector lower part and aligned correctly.
  (see Figure 10) The maximum overhang of the Insertion Rail beyond the Mounting Rail is 40 cm.

- **Mounting the Insertion Rail**
  Next, securely fasten the Insertion Rail to the Facade Connector upper part using two Cross-connected screws. Ensure that it is firmly in place and flush with the surface. (See Figure 11)
  Make sure that the contact surfaces are free of dirt and debris.

- **Installing additional Insertion Rails**
  The remaining Insertion Rails should be installed at the specified distance L2 in the same manner as the first Insertion Rail. The upper edge of the Facade Connector lower part, for example, serves as a reference point for the distance L2. This reference must be applied consistently for all rails. (See Figure 12) For safety reasons, check the external dimensions of the modules before continuing with installation. For the Landscape variant, use “MB” instead of “ML.”

$$Insertion\ Rail\ spacing = ML + 13\ mm$$

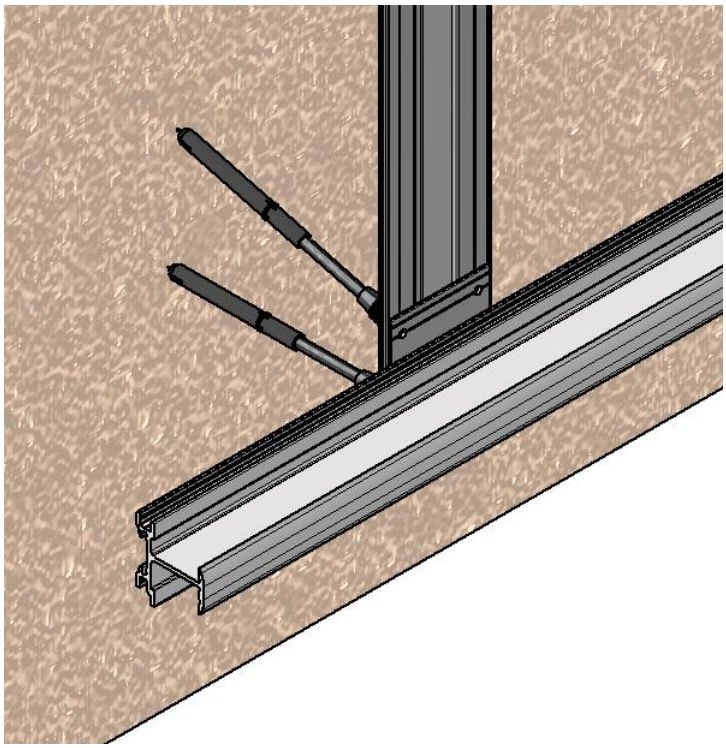


Figure 10: Installation of the Insertion Rail

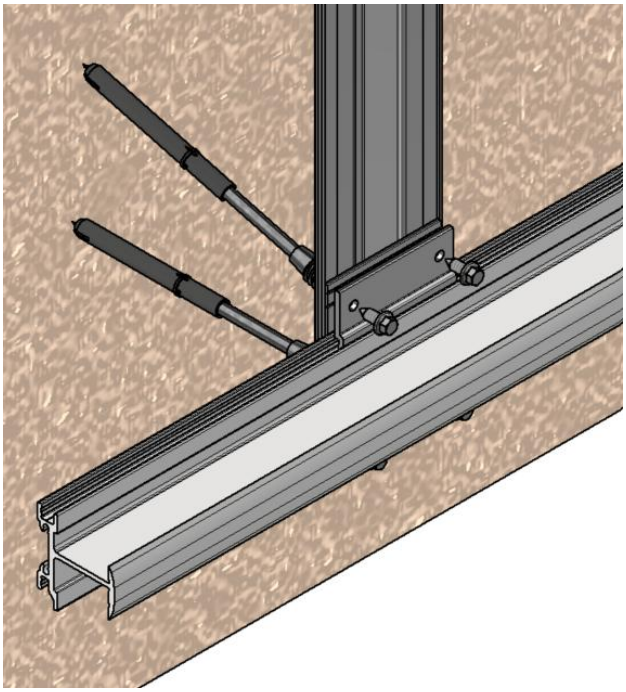


Figure 11: Mounting the Insertion Rail

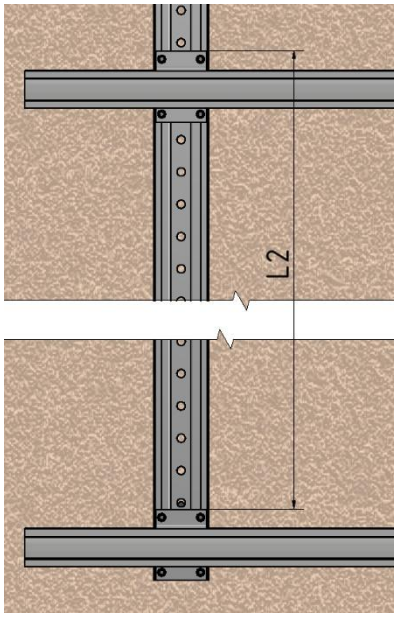


Figure 12: Distance between the Insertion Rails (L2)

Step 7: Final assembly of the first Insertion Rail

- **Installing additional Facade Connectors**
  After pre-installing the Insertion Rail 30/Insertion Rail 35 using the outside Facade Connectors, install the remaining Facade Connector lower parts and their corresponding Facade Connector upper parts in the same manner.

- **Mounting**
  Assembly is performed according to the steps already described (Step 5 and Step 6), ensuring that the parts fit properly and are securely fastened.

- **Aligning and Adjusting**
  During installation, the position of the Insertion Rails must be checked continuously. The Insertion Rail is installed at a right angle to the Mounting Rail. If necessary, the position of the Insertion Rails must be adjusted accordingly to ensure uniform, parallel alignment and a precise fit for the PV-Modules.

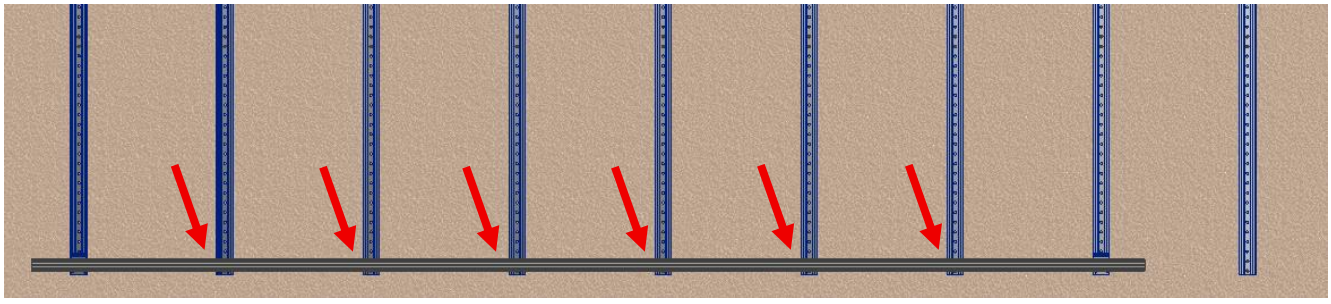


Figure 13: Installation of the remaining Facade Connectors

Step 8: Continue building out the module array to the side

- **Installing additional Insertion Rails using the Butt Connector 30/35**
  The additional Insertion Rails are connected to the existing Insertion Rails using a Butt Connector 30/35.
  First, as in Step 5, install the Facade Connector lower parts and loosely insert the Insertion Rail at a distance from the rail that is already secured. Next, slide the Butt Connector onto the profile. Then slide the loose rail onto the profile until the Butt Connector is crimped. Next, continue installing the Insertion Rail as described in Steps 6 and 7.

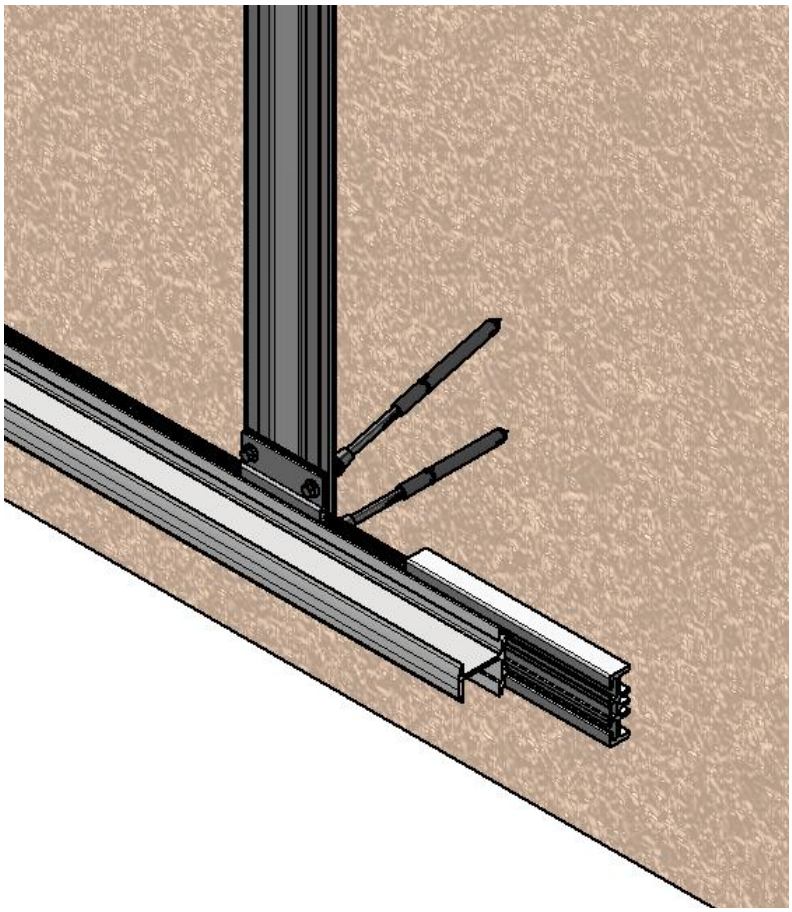


Figure 14: Installation of the Butt Connector 30/35

Step 9: Installing the Modules

- **Inserting the PV-Module**
  First, position the PV-Module at an angle and insert its upper edge into the upper Insertion Rail.
  Then slide the module upward into the upper rail until it stops. (See Figure 15)

- **Sweeping into position**
  After inserting the PV-Module, push it back to have it parallel to the wall.
  (See Figure 16)

- **Embedding the module**
  Carefully place the module down into the lower Insertion Rail.
  (See Figure 17)

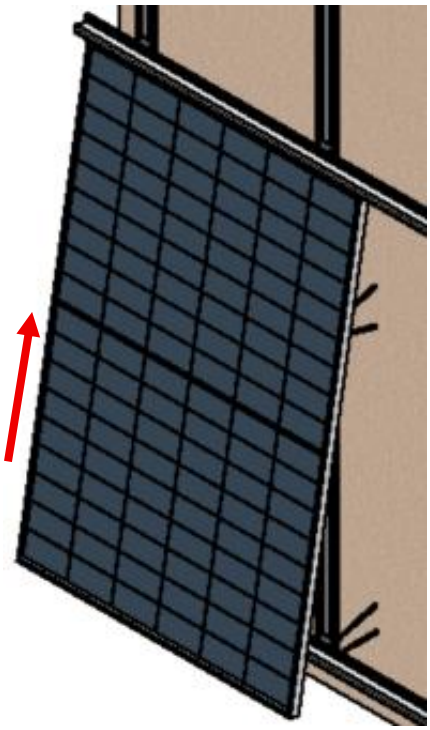


Figure 15: Insert the PV-Module

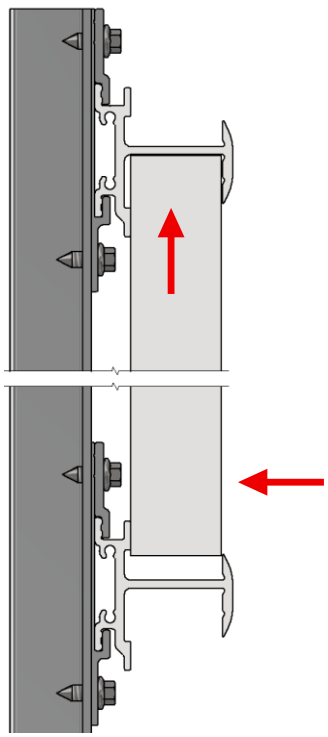


Figure 17: Sweep the PV-Module into position

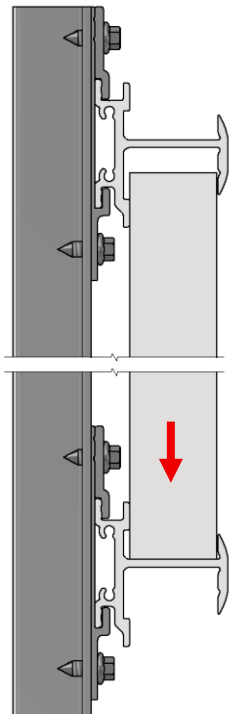


Figure 16: Embed the PV-Module

Step 10: Installation of the Spacer

- **Inserting the Spacers**
  The Spacers must be inserted into the designated areas on all four sides of the PV-Module. Ensure that they are positioned correctly and fit securely.

- **Using Infield Spacer**
  Infield Spacers must be used inside the module array. These ensure that the required minimum spacing of 10 mm between the modules is maintained. (See Figure 18)

- **Function of the Spacers**
  In addition to maintaining proper spacing, the Spacers also help reduce noise by minimizing the movement of the modules within the frame.

- **Using Edge Spacer on the edge of the module array**
  Edge Spacer should be installed on the outer edges of the module array. These help reduce potential noise.

- **Installing Instructions for Edge Areas**
  The Edge Spacer must not protrude beyond the Insertion Rail to ensure a clean finish. (See Figure 19)

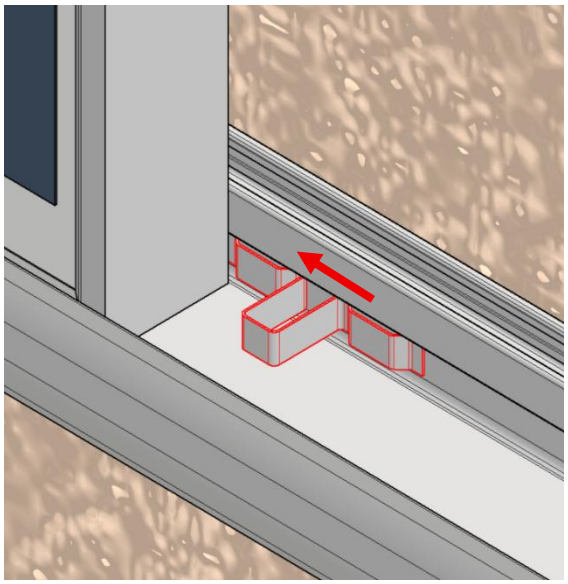


Figure 18: Installation Infield Spacer

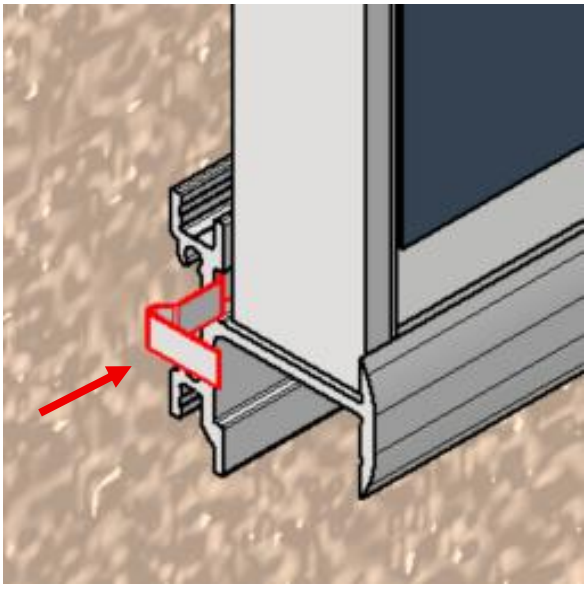


Figure 19: Installation Edge Spacer

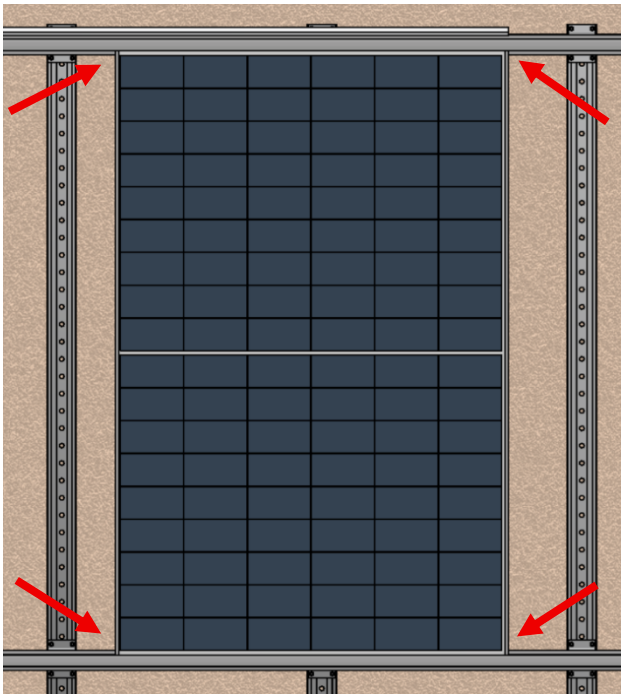


Figure 20: Spacer positions

Step 11: Installation of the remaining modules

- **Inserting the neighboring Module**
  Position the neighboring module close to the unit that has already been installed — leaving just enough space to allow for wiring — and slide it into the Insertion Rails. Then connect the plug to the adjacent module.

- **Positioning on the existing Infield Spacer**
  The module is slid onto the Infield Spacers already installed (at the top and bottom of the previously mounted module). (See Figure 21)
  Next, insert a Spacer at the top and bottom of the module. For installations inside the module row, an Infield Spacer is inserted; at the end of a module row, an Edge Spacer must be used instead to finish the row
  (see Figure 18 and Figure 19).

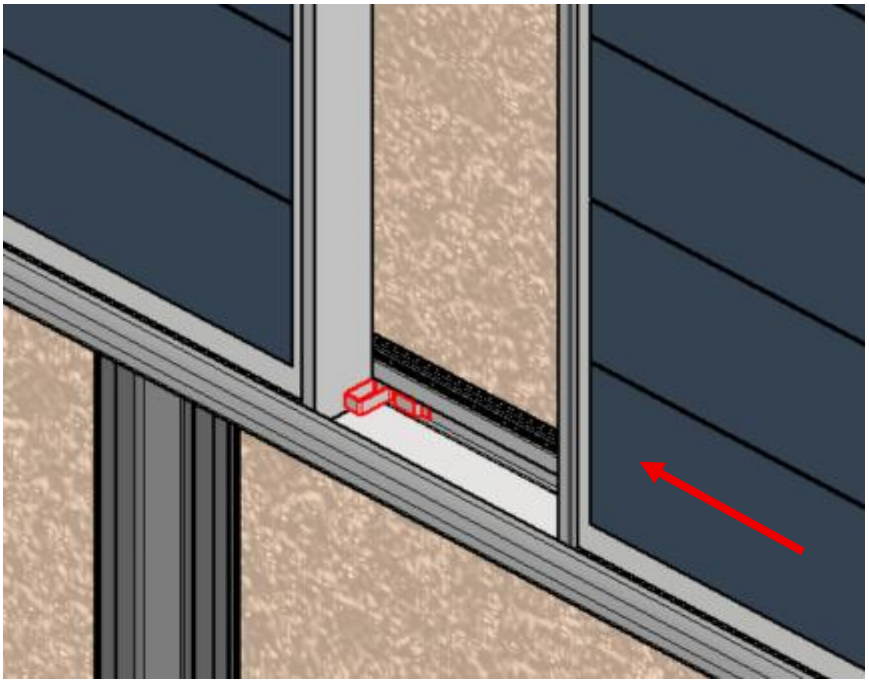


Figure 21: Slid onto the Spacers of the neighboring module

Step 12: Installing the End Cover

- **Preparation**
  The End Covers must be cut to the required length.
  Tip: The End Covers can be cut to size at the same time with the Insertion Rail.

- **Installing the End Covers**
  The End Covers should be positioned at an angle against the Insertion Rail and snapped audibly into place at the top and bottom of the respective Insertion Rail. (See Figure 22 and Figure 23)

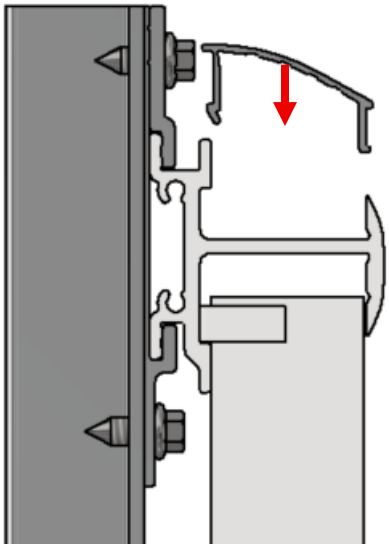


Figure 22: Installing the End Cover on the top

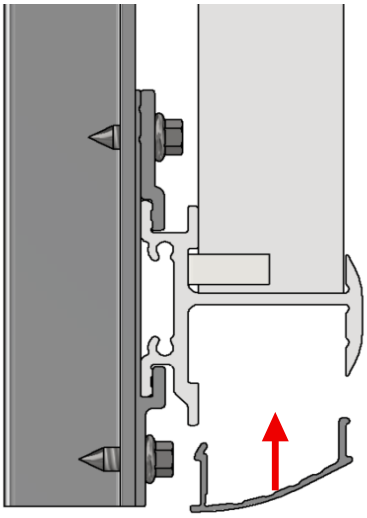


Figure 23: Installing the End Cover on the bottom

Step 13: Installing the Side Plate

- **Aligning of the components**
  The Side Plate must be installed in the correct position and must not be installed the wrong way. It is essential to ensure the correct orientation before fastening it. The Side Plate must be installed so that it completely covers the side of the Insertion Rail (see Figure 24). If part of the Insertion Rail is visible on the side next to the Side Plate, it has been installed the wrong way (see Figure 25).

- **Fastening the Side Plate**
  Secure the Side Plate in the designated position using two Tapping Screws SW8 4,8x19 black.
  Make sure it is securely fastened and that it lies flat against the surface.

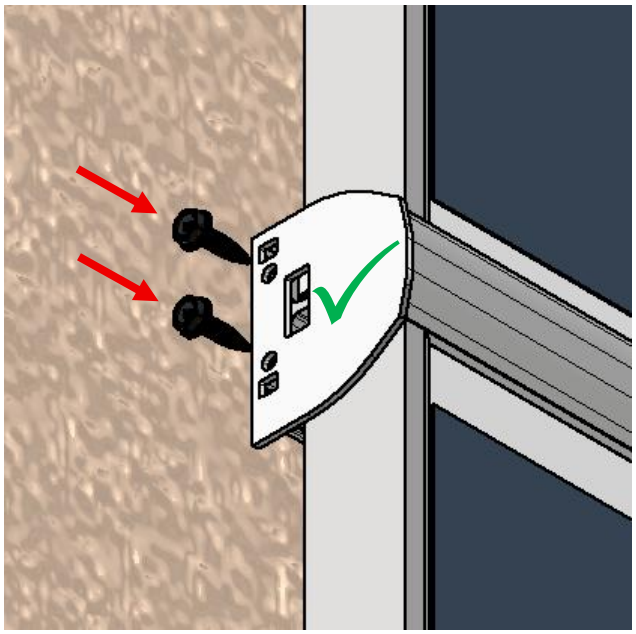


Figure 24: Correct installed Side Plate

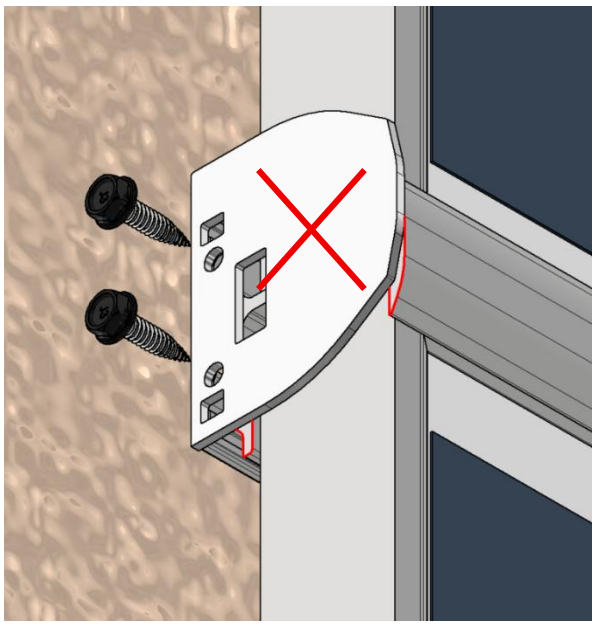


Figure 25: Incorrect installed Side Plate

4.1.2 Insertion System for uninsulated solid concrete walls

Installation on uninsulated facades is performed using a Mounting Rail and a concrete screw or similar fastener. The Insertion System is mounted on the Mounting Rail using a Cross-connected screw. As a result, this system does not require any additional anti-slip protection.
If a larger rear ventilation space is required, the installation is performed as described in 4.1.1.

To better illustrate the geometry, the system is shown in gray; the system is shipped is black.

ⓘ Important information:

- The modules can be mounted in portrait or landscape orientation
- Measure the module's dimensions directly on the module itself; adjust the distance of the Mounting Rail if necessary!
- The client is responsible for providing the structural analysis of the mounting points
- Mounting hardware can be selected freely and is not available from IBC Solar
- The head diameter or size of the screw must be selected to match the hole diameter (Ø13.5 mm) of the Mounting Rail to prevent the screw from slipping through

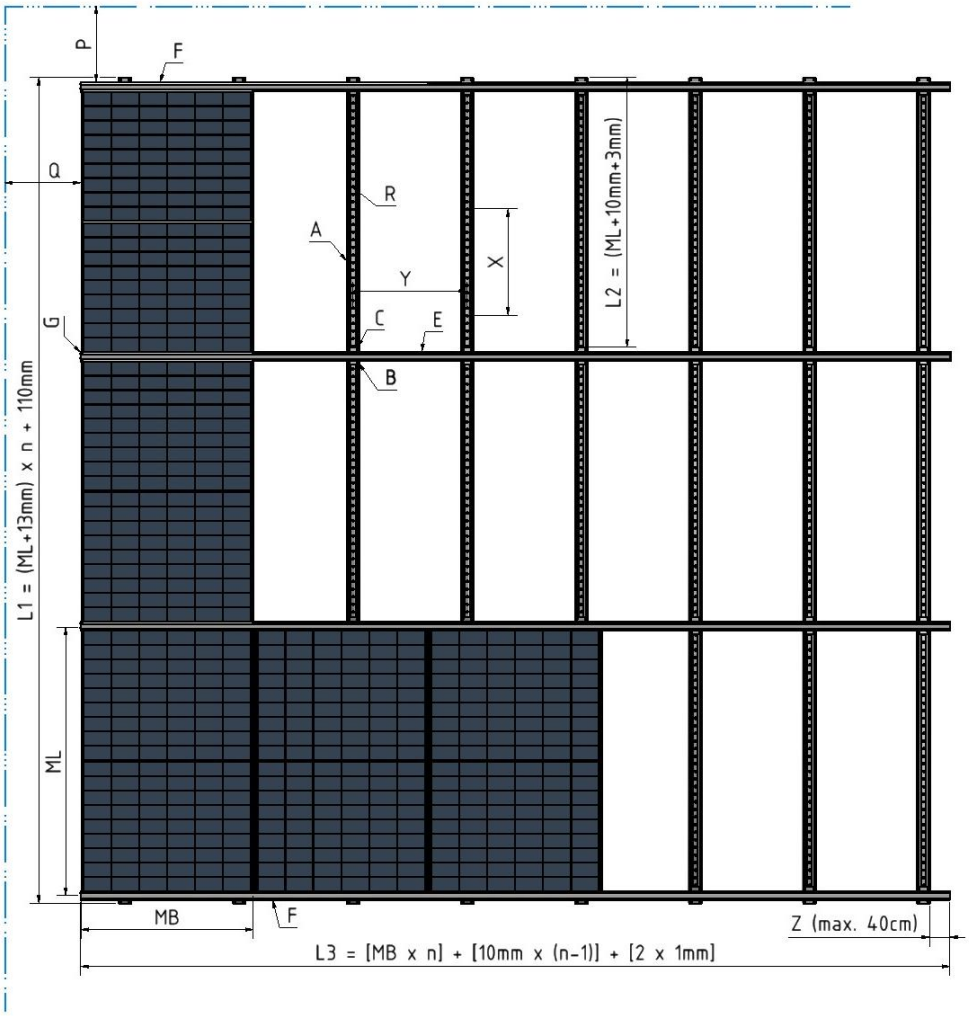


Figure 26: Installation Diagram for an Insertion System for uninsulated Solid Concrete Walls

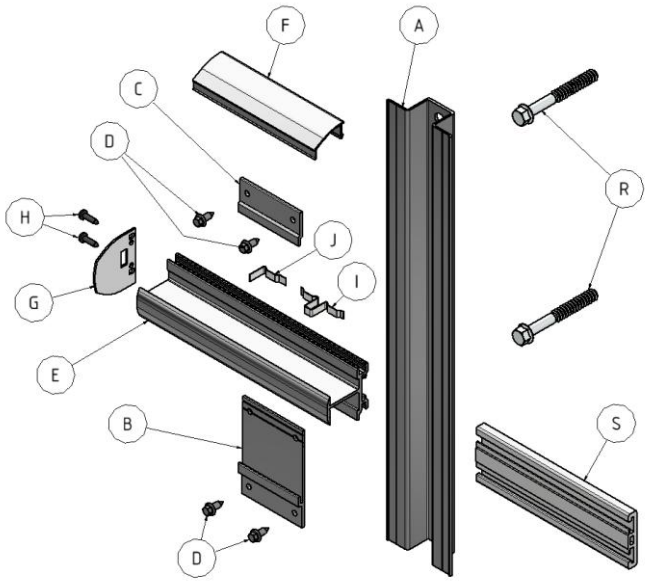


Figure 27: Explotion view of an Insertion System with a Concrete screw

	Description
L1 = (ML + 13 mm) × n + 110 mm	Length of the Mounting Rail
L2 = (ML + 13mm)	Distance between the Facade Connector lower part (Assembly dimensions)
L3 = [MB × n] + [10mm × (n-1)] + 2mm	Length of the Insertion Rail 30 / Insertion Rail 35
MB	Module width
ML	Module length
n	Number of modules
A	Mounting Rail (Support Profile)
B	Facade Connector lower part
C	Facade Connector upper part
D	Cross-connected screw 5,5x20 A4
E	Insertion Rail 30 / Insertion Rail 35
F	End Cover 30 / End Cover 35
G	Side Plate 30 / Side Plate 35
H	Tapping Screw SW8 4,8x19 black
I	Infield Spacer
J	Edge Spacer
R	Concrete Screw
S	Butt Connector Insertion Rail 30/35 black
P	Distance from the edge of the building to the module array (vertical)
Q	Distance from the edge of the building to the module array (horizontal)
X	Spacing of the Reisser mounting points as specified
Y	Spacing of the Mounting Rails as specified
Z	Maximum overhang of the Insertion Rail

Table 3: Legend for Figures 26 and 27

ⓘ When installing the modules in landscape orientation, switch “ML” and “MB.”

Step 1: Apply wall markings for installation

- **Positioning the Module Array**
  First, the location of the module array is determined; to do this, the dimensions “P” and “Q” must be taken into account. (See Figure 26)

- **Determining the distances**
  The vertical spacing of the top-hat rails must be determined in accordance with the structural design specifications.

- **Marking the positions**
  The determined positions of the Mounting Rails must be clearly and visibly marked on the wall. Care must be taken to ensure that the specified distances are strictly observed.

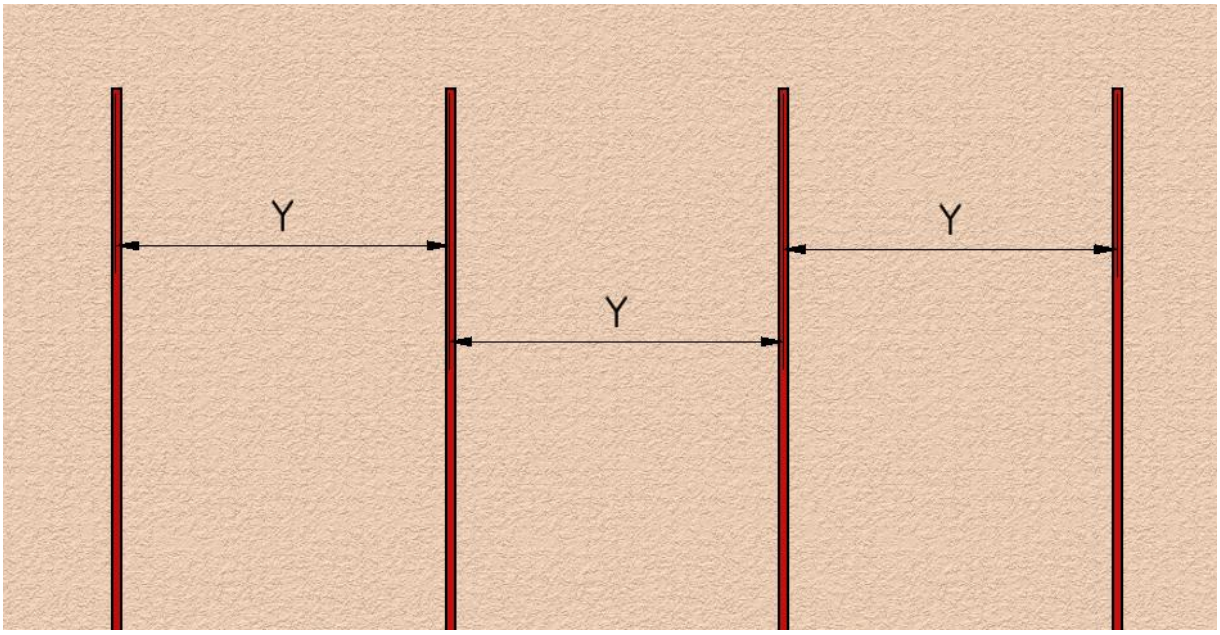


Figure 28: Marking the Mounting Rail positions based on the static design

Step 2: Drilling the first holes to align the Mounting Rail

- **Positioning of the first drill holes**
  First, determine the top and bottom mounting positions on each Mounting Rail.
  Drill a hole perpendicular to the wall surface at each of these positions.
  When installing additional Mounting Rails vertically, the maximum distance between them must not exceed 5 cm.
  Ensure that no Facade Connectors can be attached in this area.

- **Drilling the holes**
  The drill holes shall be executed in accordance with the requirements of the intended fastening system. Ensure that the holes are precisely aligned and plumb; use a drilling template if necessary. The drilling depth depends on the requirements of the concrete screws being used.

- **Preparing the drill hole**
  The drilled holes must be properly blown out and prepared before further assembly to ensure optimal anchoring.

- **Be aware of the seating depth**
  The required drilling depth must be strictly adhered to in accordance with the concrete screw manufacturer's technical specifications.

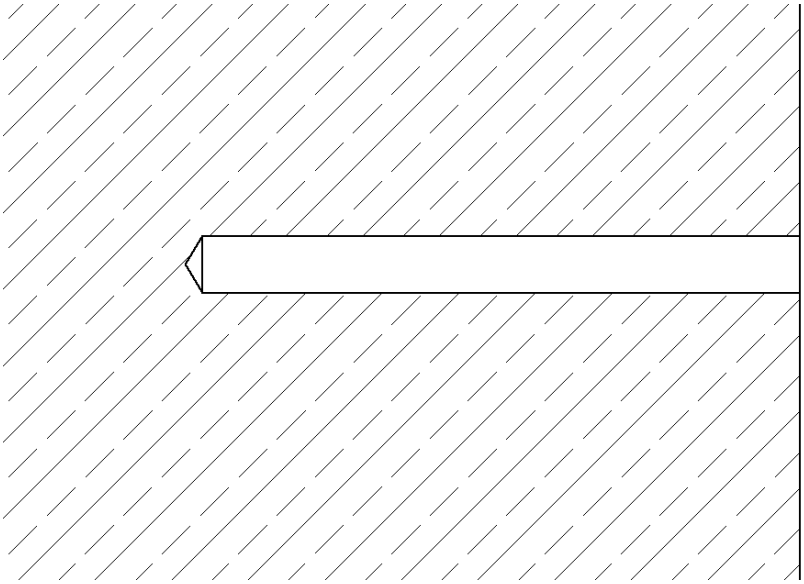


Figure 29: Cross-section of a drillhole

Step 3: Aligning the Mounting Rail

- **Installing of the Mounting Rails**
  First, place the Mounting Rail in the designated position and align it.

- **Mounting points at the top and bottom**
  The Mounting Rail must be secured at the top and bottom with one concrete screw each. When installing the rail and driving in the screws, the manufacturer's specifications must be strictly followed, particularly with regard to installation depth and installation procedures.

- **Aligning of the Mounting Rails**
  The Mounting Rails must be aligned with each other so that a continuous, vertical, level mounting surface is created. Any unevenness should be corrected by adjustment as much as possible.

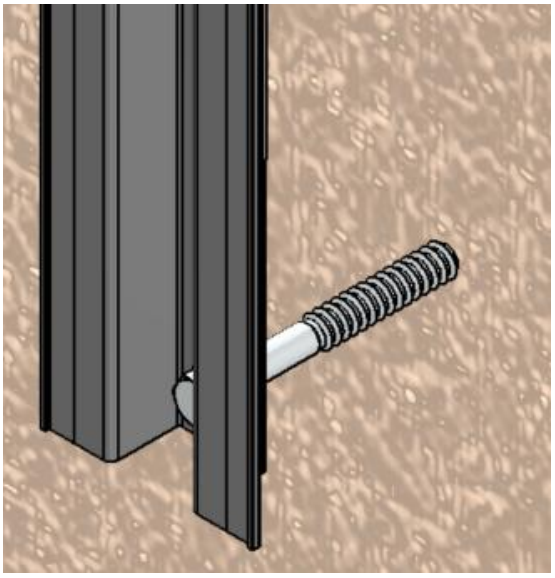


Figure 30: Lower end of the Mounting Rail with Concrete Screw

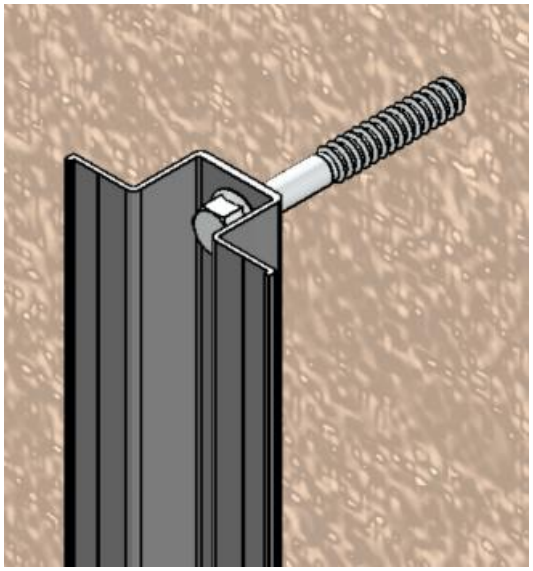


Figure 31: Upper end of the Mounting Rail with Concrete Screw

Step 4: Complete installation of the Mounting Rail

- **Drilling holes for the additional mounting points**
  The remaining holes must be drilled at the designated locations according to the mounting plan.
  The remaining holes must be drilled, cleaned out, and prepared at the designated locations as described in Step 2.

- **Adding additional mounting points**
  When installing concrete screws, the manufacturer's specifications must be strictly followed. This includes, in particular, the requirements for installation and embedment depth.

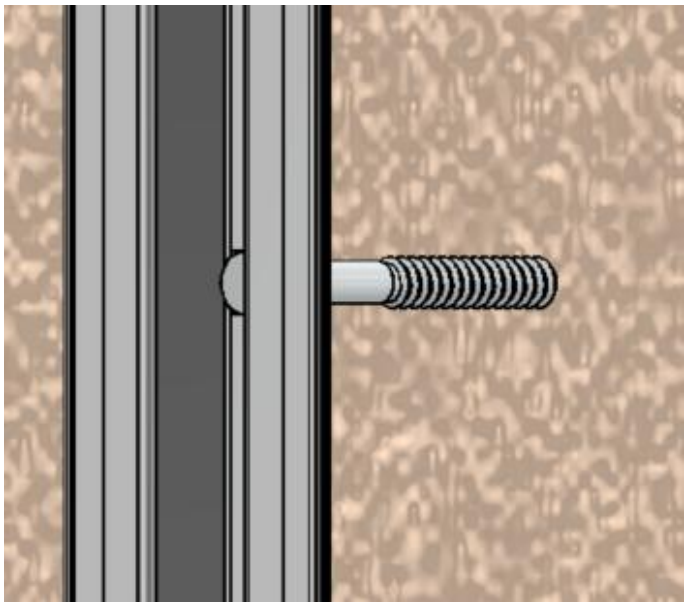


Figure 32: Mounted Rail with concrete screw

Step 5: Installation Facade Connector lower part

- **Preparing for Installation**
  Before beginning installation, make sure that the contact surfaces of the Mounting Rail and the Facade Connector are free of dirt and debris.

- **Mounting Facade Connector lower parts**
  In the first step, install only the Facade Connector lower part at the beginning and end of each Insertion Rail 30/35. (See Figure 33) Make sure that the outer edge of the lower section of the Facade Connector does not protrude beyond the Mounting Rail.

- **Installing of the Facade Connectors**
  The Facade Connector lower parts must each be properly secured to the Mounting Rail using two Cross-connected screw. Ensure that they are securely and correctly seated. No shavings should be trapped between the contact surfaces of the Mounting Rail and the Facade Connector lower part, as this will compromise the fit and the quality of the fastening. (See Figure 34)

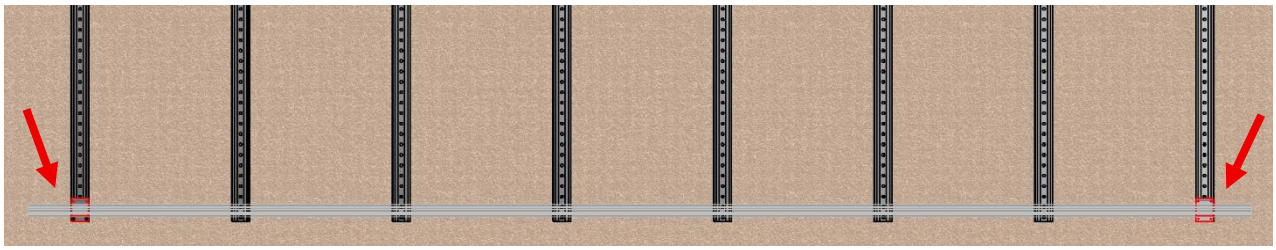


Figure 33: Installation of the outside Facade Connectors for each Mounting Rail

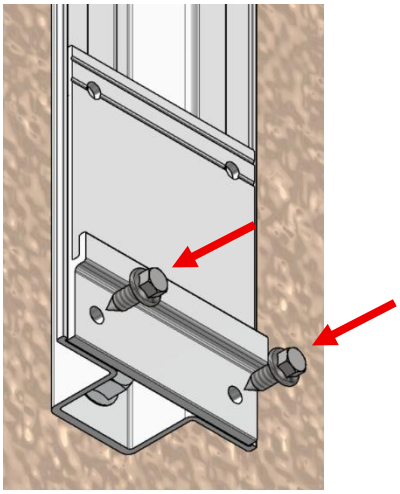


Figure 34: Installation of the Facade Connector lower part

Step 6: Installing of the first Insertion Rail

- **Inserting the first Insertion Rail**
  The Insertion Rail must be inserted into the installed Facade Connector lower part and aligned correctly.
  (see Figure 35) The maximum overhang of the Insertion Rail beyond the Mounting Rail is 40 cm.

- **Mounting the Insertion Rail**
  Next, securely fasten the Insertion Rail to the Facade Connector upper part using two Cross-connected screws. Ensure that it is firmly in place and flush with the surface. (See Figure 36)
  Make sure that the contact surfaces are free of dirt and debris.

- **Installing of additional Insertion Rails**
  The remaining Insertion Rails should be installed at the specified distance L2 in the same manner as the first Insertion Rail. The upper edge of the Facade Connector lower part, for example, serves as a reference point for the distance L2. This reference must be applied consistently for all rails. (See Figure 37) For safety reasons, check the external dimensions of the modules before continuing with installation. For the Landscape variant, use “MB” instead of “ML.”

$$Insertion\ Rail\ spacing = ML + 13\ mm$$

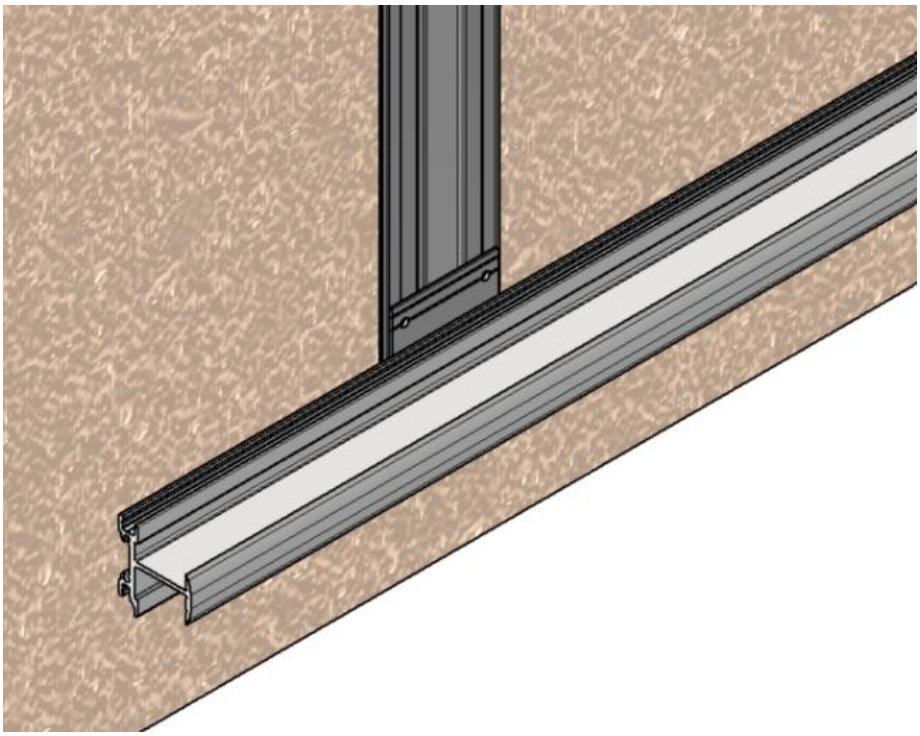


Figure 35: Installation of the Insertion Rail

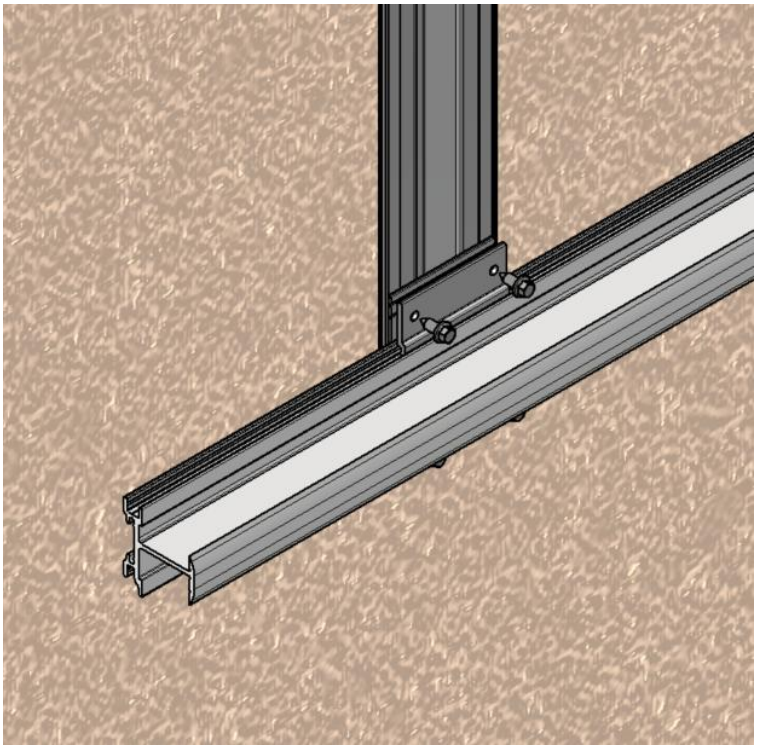


Figure 36: Mounting the Insertion Rail

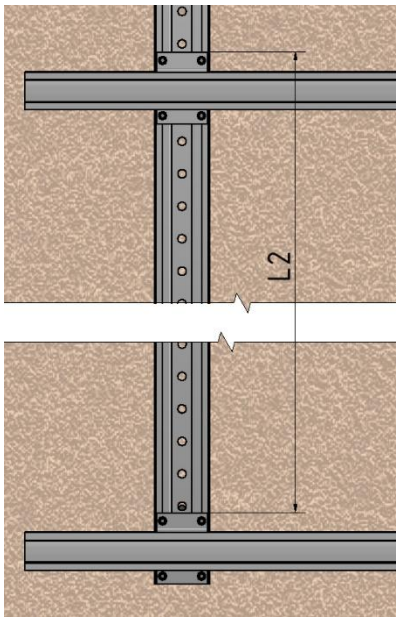


Figure 37: Distance between the Insertion Rails (L2)

Step 7: Final assembly of the first Insertion Rail

- **Installing of additional Facade Connectors**
  After pre-installing the Insertion Rail 30/Insertion Rail 35 using the outside Facade Connectors, install the remaining Facade Connector lower parts and their corresponding Facade Connector upper parts in the same manner.

- **Mounting**
  Assembly is performed according to the steps already described (Step 5 and Step 6), ensuring that the parts fit properly and are securely fastened.

- **Aligning and Adjusting**
  During installation, the position of the Insertion Rails must be checked continuously. The Insertion Rail is installed at a right angle to the Mounting Rail. If necessary, the position of the Insertion Rails must be adjusted accordingly to ensure uniform, parallel alignment and a precise fit for the PV-Modules.

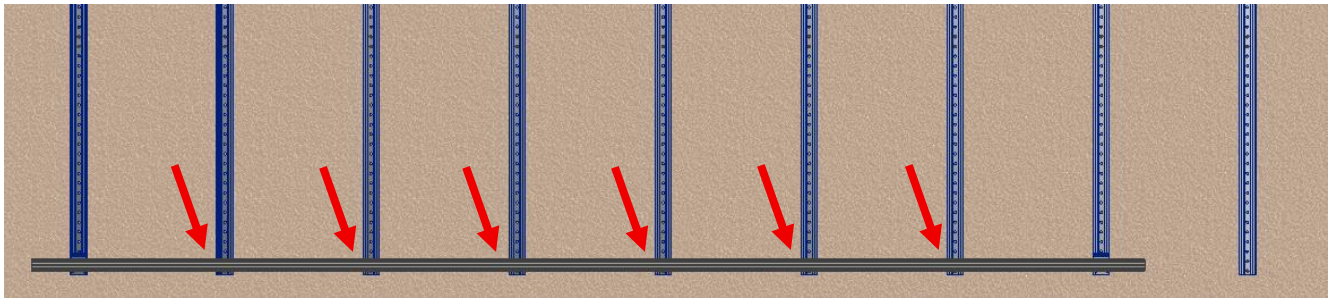


Figure 38: Installation of the remaining Facade Connectors

Step 8: Continue building out the module array to the side

- **Installing additional Insertion Rails using the Butt Connector 30/35**
  The additional Insertion Rails are connected to the existing Insertion Rails using a Butt Connector 30/35.
  First, as in Step 5, install the Facade Connector lower parts and loosely insert the Insertion Rail at a distance from the rail that is already secured. Next, slide the Butt Connector onto the profile. Then slide the loose rail onto the profile until the Butt Connector is crimped. Next, continue installing the Insertion Rail as described in Steps 6 and 7.

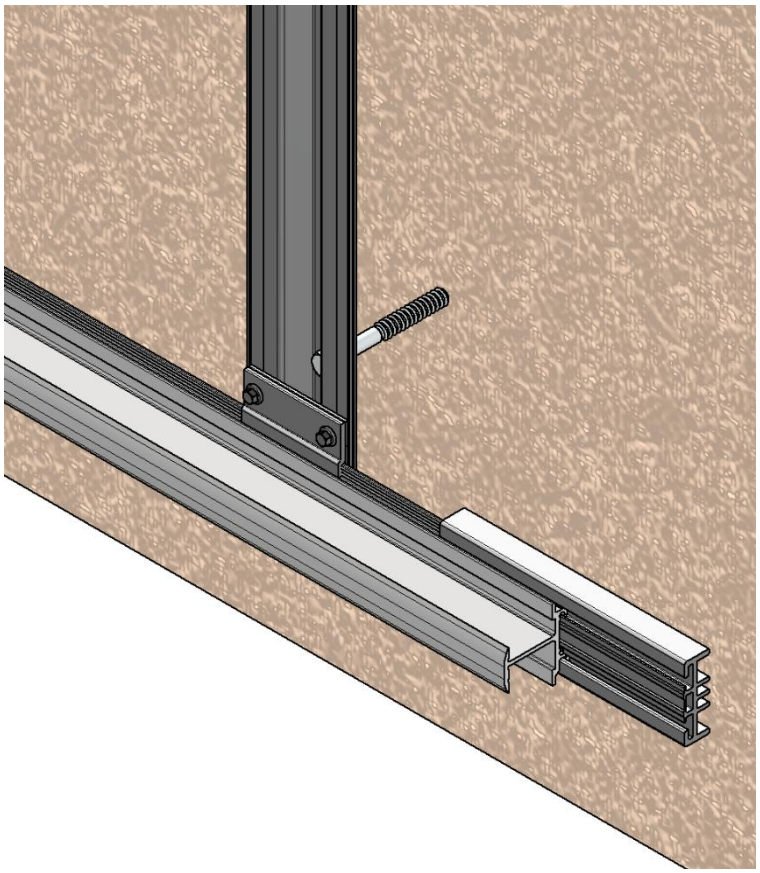


Figure 39: Installation of the Butt Connector 30/35

Step 9: Installing the Modules

- **Inserting the PV-Module**
  First, position the PV-Module at an angle and insert its upper edge into the upper Insertion Rail.
  Then slide the module upward into the upper rail until it stops. (See Figure 40)

- **Sweeping into position**
  After inserting the PV-Module, sweeping it into the mounting position.
  (See Figure 41)

- **Embedding the module**
  Firmly place the module down onto the lower Insertion Rail.
  (See Figure 42)

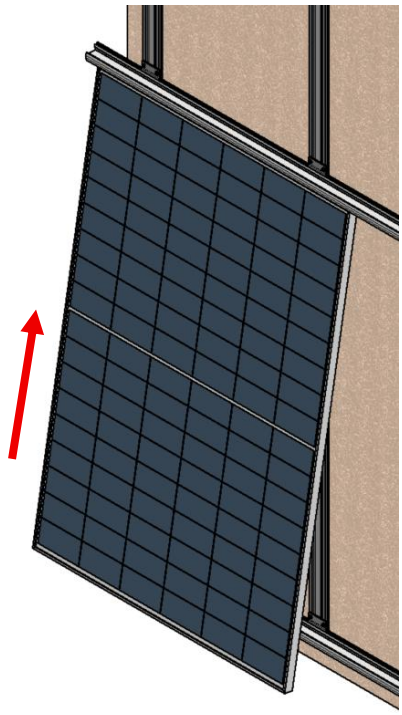


Figure 40: Insert the PV-Module

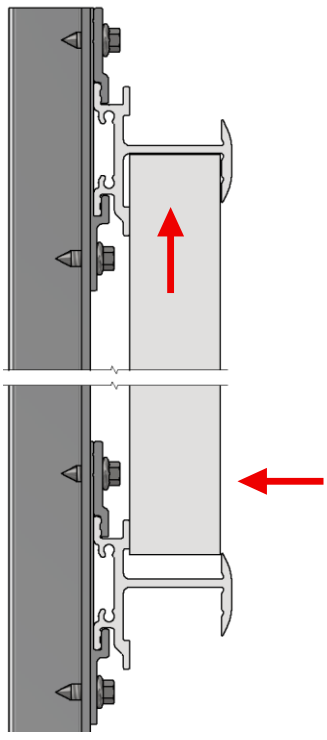


Figure 42: Sweep the PV-Module into position

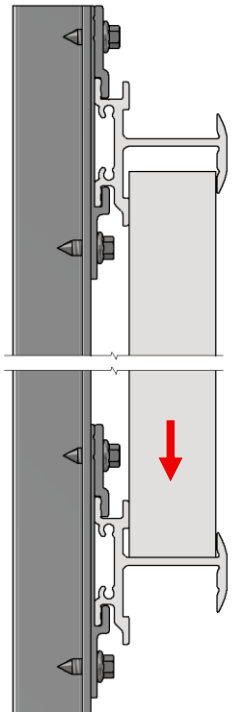


Figure 41: Embed the PV-Module

Step 10: Installation of the Spacers

- **Inserting the Spacers**
  The Spacers must be inserted into the designated areas on all four sides of the PV-Module. Ensure that they are positioned correctly and fit securely.

- **Using Infield Spacers**
  Infield Spacers must be used inside the module array. These ensure that the required minimum spacing of 10 mm between the modules is maintained. (See Figure 43)

- **Function of the Spacers**
  In addition to maintaining proper spacing, the Spacers also help reduce noise by minimizing the movement of the modules within the frame.

- **Using Edge Spacers on the edge of the module array**
  Edge Spacers should be installed on the outer edges of the module array. These help reduce potential noise interference.

- **Installing Instructions for Edge Areas**
  The Edge Spacers must not protrude beyond the Insertion Rail to ensure a clean finish. (See Figure 44)

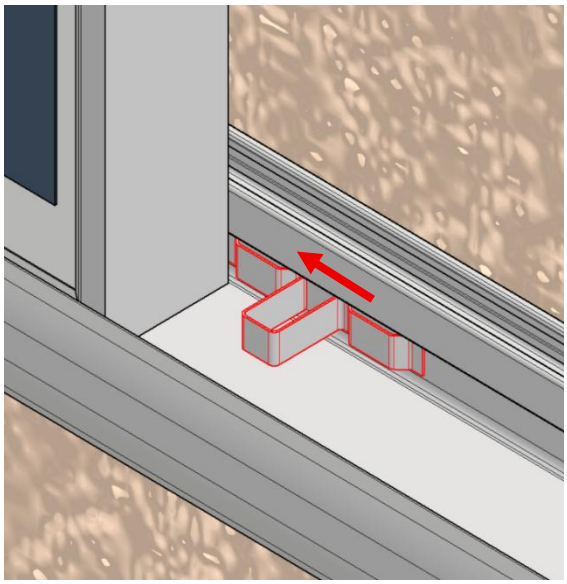


Figure 43: Installation Infield Spacer

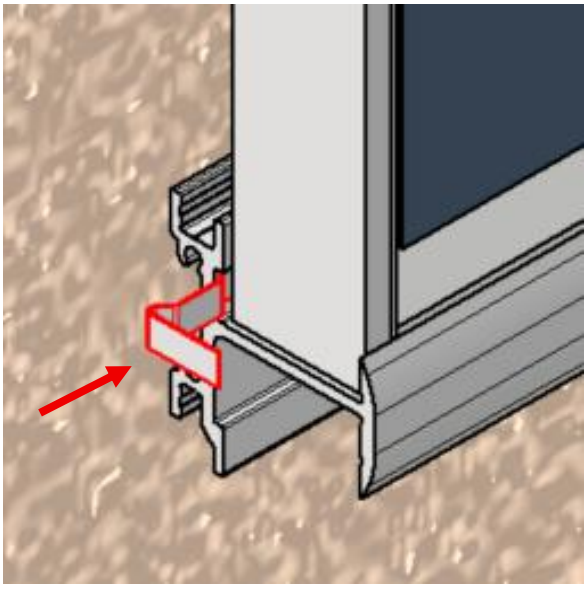


Figure 44: Installation Edge Spacer

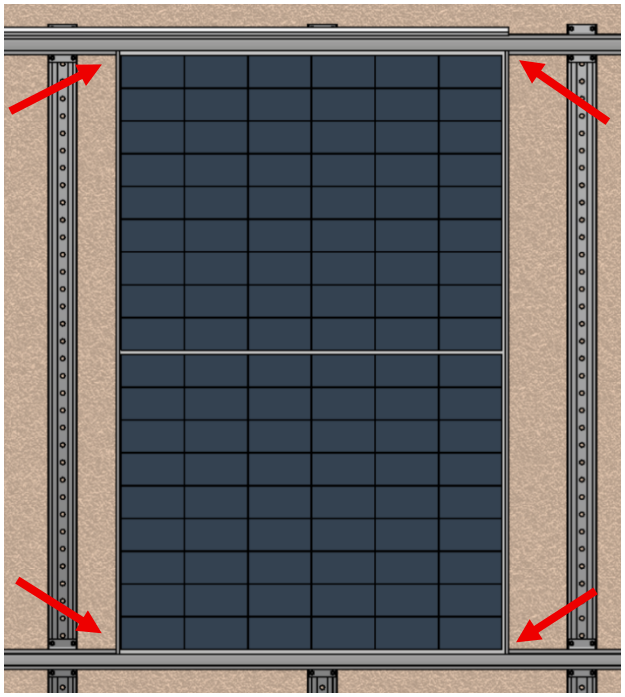


Figure 45: Spacer positions

Step 11: Installation of the remaining modules

- **Inserting the neighboring Module**
  Position the neighboring module close to the unit that has already been installed — leaving just enough space to allow for wiring — and slide it into the Insertion Rails. Then connect the plug to the adjacent module.

- **Positioning on the existing Infield Spacer**
  The module is slid onto the Spacer already installed (at the top and bottom of the previously mounted module). (See Figure 46)
  Next, insert a Spacer at the top and bottom of the module. For installations inside a module row, a Infield Spacer is inserted; at the end of a module row, an Edge Spacer must be used instead to complete the row
  (see Figure 43 and Figure 44).



Figure 46: Slid onto the Infield Spacer of the neighboring module

Step 12: Installing the End Cover

- **Preparation**
  The End Covers must be cut to the required length.
  Tip: The End Covers can be cut to size at the same time with the Insertion Rail.

- **Installing the End Covers**
  The End Covers should be positioned at an angle against the Insertion Rail and snapped audibly into place at the top and bottom of the respective Insertion Rail. (See Figure 47 and Figure 48)

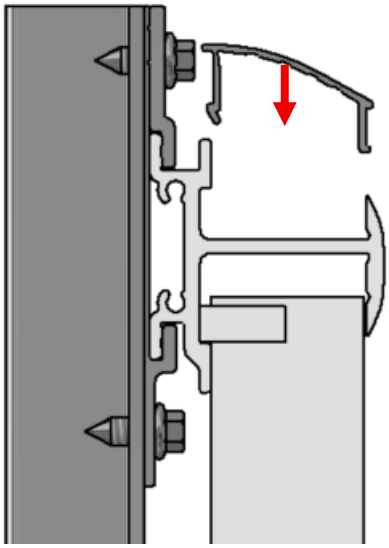


Figure 47: Installing the End Cover on the top

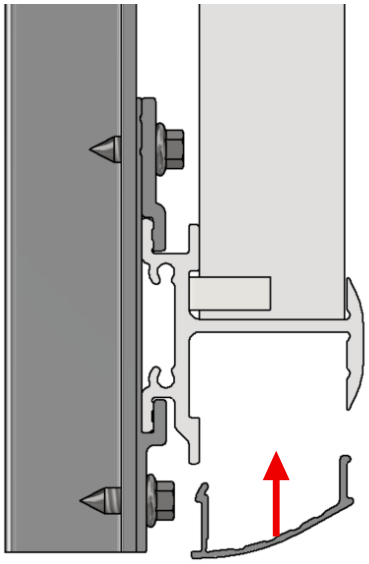


Figure 48: Installing the End Cover on the bottom

Step 13: Installing the Side Plate

- **Aligning of the component**
  The Side Plate must be installed in the correct position and must not be installed the wrong way. It is essential to ensure the correct orientation before securing it. The Side Plate must be installed so that it completely covers the side of the Insertion Rail (see Figure 49). If part of the Insertion Rail is visible on the side next to the Side Plate, it has been installed the wrong way (see Figure 50).

- **Fastening the Side Plate**
  Secure the Side Plate in the designated position using two Tapping Screws SW8 4,8x19 black.
  Make sure it is securely fastened and that it lies flat against the surface.

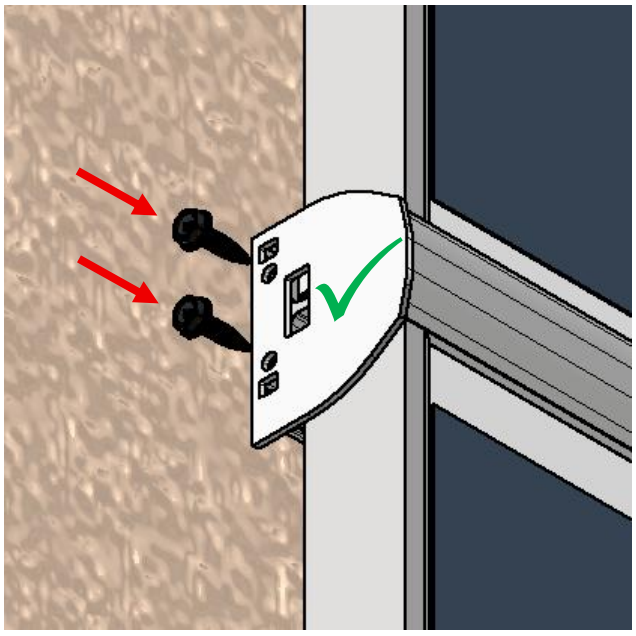


Figure 49: Correct installed Side Plate

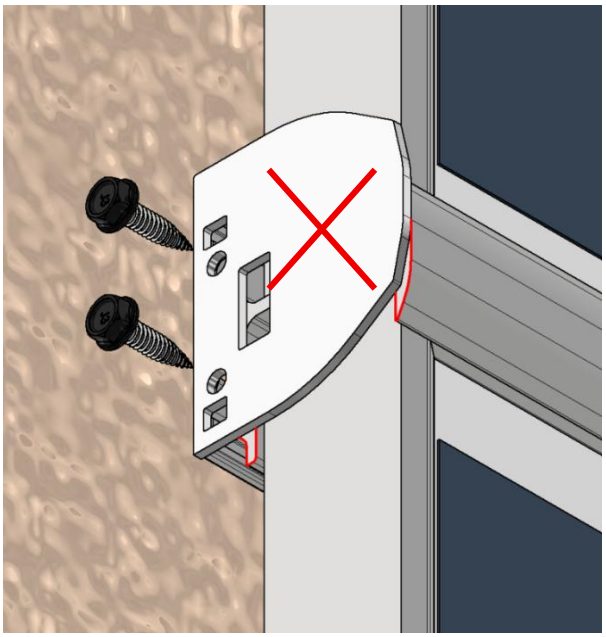
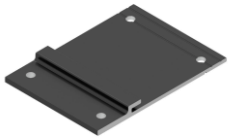
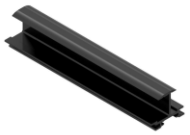
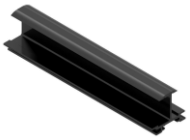


Figure 50: Incorrect installed Side Plate

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5 Bill of materials

Illustration	Item no.	Description
	6800100081	Mounting Rail 2380mm
	6800100082	Mounting Rail 5850mm
	6700300083	Facade Connector upper part
	6700300084	Facade Connector lower part
	6800100077	Insertion Rail 30, 2280mm black
	6800100078	Insertion Rail 30, 5715mm black
	6800100079	Insertion Rail 35, 2280mm black
	6800100080	Insertion Rail 35, 5715mm black
	6700300082	Butt Connector Insertion Rail 30/35 black
	6800100076	End Cover 35, 2280mm black

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Illustration	Item no.	Description
	6800100083	End Cover 30, 2280mm black
	6700200064	Side Plate 35 black
	6700200069	Side Plate 30 black
	6700200065	Infield Spacer
	6700200071	Edge Spacer
	6901200002	Cross-connected screw 5,5x20 A4
	6900600020	Tapping Screw SW8 4,8x19 black
	6700200073	drilling template

Illustration	Item no.	Description
	6901200007	Spacer screw RDS-CA A4 10,0 x 150mm
	6901200008	Spacer screw RDS-CA A4 10,0 x 190mm
	6901200009	Spacer screw RDS-CA A4 10,0 x 210mm
	6901200010	Spacer screw RDS-CA A4 10,0 x 230mm
	6901200011	Spacer screw RDS-CA A4 10,0 x 250mm
	6901200012	Spacer screw RDS-CA A4 10,0 x 270mm
	6901200013	Spacer screw RDS-CA A4 10,0 x 290mm
	6901200014	Spacer screw RDS-CA A4 10,0 x 310mm
	6901200015	Spacer screw RDS-CA A4 10,0 x 330mm
	6901200016	Spacer screw RDS-CA A4 10,0 x 350mm
	6901200017	Spacer screw RDS-CA A4 10,0 x 370mm

Table 4: Bill of Materials

6 Appendix

6.1 Notes on maintenance

In addition to the mandatory electrical inspections, an annual and an incident-dependent (heavy storm, hail etc.) inspection of the mounting system has to take place. Any deviations are to be noted in the maintenance log. Everything "not ok" has to be fixed to prevent further damages.

Mechanical connections, e.g. the module clamps must be checked for firm seating and tightening torque and tightened if necessary. Building protection mats can slip and have to be put back in position.

Disassemly of the mounting system is carried out in the reverse order of assemly steps.

If it becomes necessary to clean the modules, this must be done without chemical cleaning products and using clear water only. Observe the specifications of the module manufacturer.

The modules can easily be replaced by removing the module cabling and undoing the corresponding module clamps. Adequate safety standards are advised.

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6.2 Documents

Wartungsprotokoll ☐ **TopFix 200** ☐ **AeroFix** ☐ **AeroFlat** ☐ **WallFix**
Maintenance log TopFix 200 AeroFix AeroFlat WallFix

Kommission:
Commission: .....
Standort:
Place: .....

i.O. Ok	n.i.O. not Ok	
☐	☐	Anlage befindet sich in einem optisch einwandfreien Zustand und laut Montageplan auf korrekter Position The system is in a visually perfect condition and according to the installation plan in the correct position
☐	☐	Montagesystem auf Standfestigkeit und Korrosion geprüft Mounting system tested for stability and corrosion
☐	☐	Keine Beschädigungen der Dachhaut durch die PV Anlage No damage to the roof by the PV system
☐	☐	Mechanische Verbindungen auf festen Sitz und Anzugsmoment gemäß Montageanleitung geprüft Mechanical connections for tight fit and tightening torque tested according the installation manual

Zusätzlich nur bei AeroFix und AeroFlat
Additional only with AeroFix and AeroFlat

☐	☐	Bautenschutzmatten befinden sich in korrekter Position Building protection mats are in the correct position
☐	☐	Ballast befindet sich auf richtiger Position (auf der Bodenschiene oder Ballastschiene) Ballast is in the correct position (on the base rail or ballast rail)
☐	☐	Ballast ist optisch in Ordnung (keine Risse, Brüche etc.) Ballast is visually fine (no cracks, breaks etc.)
☐	☐	ungehinderter Wasserablauf Unhindered water drainage

Anmerkungen
Comments

.....

.....

.....

Have sun!

Wartung wurde durchgeführt von
Maintenance was carried out by

Firma:
Company: .....

Person:
Person: .....

Die Wartungsarbeiten sind durch eine Fachfirma, die Erfahrung mit elektrischen Anlagen und Arbeiten mit dem Montagesystem vorweisen kann, auszuführen.
The maintenance work must be carried out by a technical company that has experience with electrical systems and works with the mounting systems.

Das ausgefüllte Wartungsprotokoll muss in Kopie der anlagebetreibenden Person ausgehändigt werden.
The completed maintenance log must be handed over in copy to the plant

Hiermit bestätige ich die Korrektheit und Ausführung der Wartung
I confirm the correctness and execution of the maintenance

Ort, Datum
Place, date .....

Unterschrift
Signature .....

Bedarf der eigenhändigen Schriftform einer bevollmächtigten Person!
Need of the written form of an authorized person!

Name in Druckbuchstaben
Printed Name .....

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IBC SOLAR AG
Am Hochgericht 10
96231 Bad Staffelstein

+49 9573 9224-0
info@ibc-solar.de
www.ibc-solar.de