UBBINK SOLAR IN-ROOF SYSTEM
The integrated solar mounting system

Installation guide
# UBBINK SOLAR IN-ROOF SYSTEM

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Introduction

- The Ubbink Solar In-Roof system is designed for mounting and integrating all sizes and types of photovoltaic (PV) modules with tiled or slate roofs.

- The system ensures an attractive low profile installation that blends into the roof without detracting from the character or architectural integrity of the building.

- Installations are fully watertight thanks to the unique in-roof flashing system and Ubbink’s many years experience in roofing component design.

- The system is suitable for all pitched roofs from 15° to 70°.

- On new roofs, the Ubbink Solar In-Roof system reduces cost as tiles or slates are not required below the PV array.

- The Ubbink Solar In-Roof system is guaranteed for 10 years, providing installation has been carried out correctly.
System components

- IN-ROOF ROLL
- EXPANDING FOAM ROLL
- WATERPROOF SCREWS
- SIDE FLASHING
- ALUMINIUM RAIL
- ANCHOR
- END CLAMP
- ANGLE BRACKET
- MID CLAMP
- RAIL CONNECTOR
- UBIFLEX 400MM (OPTIONAL)

The above images are representative and may change accordingly.
Installation guide

1 Roof preparation

- Ensure correct tools are to hand: hacksaw; 13mm socket spanner; 5mm Allen key; Torx T25 driver; rubber mallet; angle grinder; chalk line.

- Calculate the photovoltaic field (height x width) + 20mm spacing between modules.

- Remove the tiles / slates that cover the area calculated above.

- Remove an additional column of tiles on both the right and left hand side (2 rows for slates).

- Remove an additional row of tiles above the calculated photovoltaic field (2 rows for slates).

- Do not remove any additional tiles below the photovoltaic field (for slate leave the first row of hooks).

- Check the quality of the battens. If you are in even the slightest doubt about their condition, always replace them. As preferred best practice we always advise placing new battens alongside the old ones.

- Ideal batten spacing is 300mm; replacement or additional battens should be the same thickness as the existing battens.
2 Install Ubiflex

- Use 400mm wide Ubiflex (for very high profile tiles 500mm may be required). This is available in black, grey or terracotta.

- 240mm above the batten holding the row of tiles below the array add an additional batten over the width of the field. The size of the additional batten should be the equivalent of the original batten specification. A further additional batten is advisable immediately below the other additional batten if the pitch is below 20°.

- With a 50mm overhang above, roll out and screw the top of the Ubiflex to the newly installed batten at 450mm centres.

- Fold back the 50mm overhang of Ubiflex.

- Fold back both right and left hand sides in the same manner.

- Carefully dress the Ubiflex over the first row of tiles and stuck down with Ubbink High Tack along the leading edge. Avoid creating areas where water might pond.

- Alternatively the Ubiflex can run 450mm beyond each side of the photovoltaic fields to form a traditional soaker detail.
3 Position the in-roof roll

- Position the in-roof roll at the bottom left of the field.

- Position so the lugs at the top edge rest on a convenient batten so that the lower part of the roll overlaps the Ubiflex by at least 150mm or 200mm if the pitch is less than 20°.

- Unroll the in-roof roll across the photovoltaic field being careful not to stretch and distort the roll profiles otherwise the following roll will not fit.

- If the in-roof roll is too long, cut to the desired length and keep the off cut for the next row.

- If the in-roof roll is too short, unroll it until the end and then use a second roll with a 250mm overlap between the two rolls.

- The in-roof roll head laps should be a minimum of 150mm or 200mm if the pitch is less than 20°, but centred to fill the photovoltaic field.

- Tack in place with a nail below lap, or if open fixing, use watertight screws on the flat of the profile.

- Install cable for connection through the overlap, three ridge profiles in.

NOTE: For slates, slip the in-roof roll into the first row of hooks left in place.
4 Fixing the anchors

Fix the entire row of anchors at their first position at the bottom of the photovoltaic field.

**Portrait format**
- Position the first anchor 200mm away from the left hand side, so that a quarter of the PV module will fall between the anchor and the bottom of the photovoltaic field. These are fixed to the batten using three of the provided anchor screws per anchor.
- Position the subsequent anchor rows as follows: No more than a maximum of 900mm wide over the length of the rows and approximately half the length of the PV module for the distance between the heights of the rows.

**Landscape format**
- Position the first anchor 200mm above the bottom of photovoltaic field and a quarter of the PV module away from the left hand side. These are fixed to the batten using three of the provided anchor screws per anchor.
- Position the subsequent anchor rows as follows: No more than a maximum of 900mm width between the height of the rows and approximately half the length of the PV module for the distance between the anchors along the length of the rows.
5 Position the angle brackets

- Screw the angle brackets to the anchors (do not tighten).
- Place the hammerhead bolt and nut onto the angle bracket.

6 Install the side flashings

- Place the side flashing so that it covers the last crest of the merge roll.
- This flashing serves to make watertight the position between the merge roll and the tiles or slates. Very little of the flashing should be visible once the installation is complete.
- Fixed on first batten then every other batten.

The exact final position of the flashing is adjustable within the trough of the merge roll.
Slate roofs require that the Ubiflex flashing is positioned at the top of the system.

Position the 400mm wide Ubiflex approximately 200mm above the in-roof roll, with 20mm extending past the top batten. Unroll across the whole width of the PV field, screwing to the batten at the top edge of the roll.

Fold the top edge back by 20mm.

Bend both left and right hand sides back 20mm in the same manner along two thirds of the height.

Bend the top left and right extremities in the same manner.

Dress the bottom 200mm carefully over the in-roof roll.

The above images are representative and may change accordingly.
8 Fixing the rails

**Portrait format**

- To install photovoltaic modules in portrait format, the rails need to be positioned horizontally.

**Landscape format**

- To install photovoltaic modules in landscape format, the rails need to be positioned vertically.

- Cut aluminium rails to length; refer to component list produced with each order.

- Assemble the full rail run length using the rail connectors.

- Slide the first rail to the centre rivet by giving a light blow with the mallet and then push into second rail.

- Position rails against the angle brackets and tighten nut slightly.

- Centre the rails over the merge roll, horizontally for portrait and vertically centred for landscape.

- When installed vertically an ‘end cap’ should be used on both ends per rail.
9 Adjustment of the rails

- This stage is very important for the PV modules to be mounted correctly.
- Align the rails (vertically or horizontally dependant on the orientation as specified on page 11) using the chalk line.
- Ensuring these alignments are correct will result in perfect alignment of the photovoltaic field and that it will be flat, well balanced and aesthetically pleasing.
- Once the rails are correctly aligned, tighten all the nuts and bolts.

10 Installing PV modules

- Always start at the bottom.
- Align end clamp at the end of the rail and slide into position.
- Position the first PV module and tighten end clamp.
- Position the second PV module beside the first module.
- Fix this module into position, with mid clamp for portrait format or end clamp for landscape format.
- Continue mounting the PV modules in accordance with electrical connection diagram.

The above images are representative and may change accordingly.
11 Positioning the expanding foam tape (for tiles only)

- Apply the expanding foam roll onto the side flashings on both left and right hand sides to the edges of the photovoltaic field.

- Also apply the expanding foam tape to the merge roll just above the photovoltaic field.

- The foam corner junction should be formed tightly but without overlaps.
13 Completing the photovoltaic field

- Fix first row of end clamps and mount first row of PV modules, connecting the module cables as you go.
- Modules should have a 20mm gap between them. The top part of a mid clamp makes a perfect temporary spacer.
- Slide on mid clamps, add next row of modules and repeat until last row of end clamps required.
- When all modules are correctly adjusted and positioned, tighten clamps.
- Replace the rows of tiles / slates previously removed around the side and top of the photovoltaic field.

The above images are representative and may change accordingly.

12 Flat tiles and slates

- The merge roll should finish just short of the top batten, free to bend into position under tile or slate.
- The outer lip on side flashing should be turned in and flattened, allowing tile to butt onto flashing.
14 Ubbink solar mounting systems overview

**Ubbink Solar In-Roof System**
The Ubbink Solar In-Roof mounting system integrates PV modules into slate or tiled roofs, ensuring an attractive and low profile appearance. The system is fully watertight and easy to install. The Ubbink Solar In-Roof mounting system is typically installed on new roofs where it reduces cost as tiles or slates are not required below the PV array.

**Ubbink Solar On-Roof System**
The Ubbink Solar On-Roof mounting system is simple, fast, economical and suitable for all slate and tiled roofs. The PV modules are fixed to a mounting assembly just above the existing roof. The Ubbink Solar On-Roof mounting system is typically installed on existing roofs.

**Ubbink Solar Flat Roof System**
The Ubbink Solar Flat Roof mounting system positions PV modules to face south at the optimal angle. This is a modular ballasted system that sits on the flat roof ensuring no roof penetration from fixings through the roof membrane. This system can be fitted and positioned very quickly on flat roof buildings up to 25m high.
Less energy, more comfort

www.ubbink.co.uk
www.ubbink.ie