CENTROSOLAR

# CENIQ

## Mounting instructions



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## 1 Notes on these instructions

Dear customer:

With the CENIQ product from Centrosolar AG, you have acquired a strong, high-quality product.

If you have any questions on the installation or any components of the installation, please contact your local Centrosolar office.

Maintenance and opeartion of a PV installation require solid expert knowledge. This is why all work on the installation should be carried out by correspondingly qualified specialist personnel. Read these mounting instructions carefully and attentively before installing and commissioning the system. Keep the instructions in an easily accessible place. The instructions are part of the product and apply only to the CENIQ systems of Centrosolar AG. Pay special attention to the notes on safe use. Centrosolar will not accept liability for damage arising due to failure to observe these instructions.



**Safety information:**

Ensure that the correct safety instructions are followed for mounting and operation. Pay attention to the relevant general preliminary remarks from Centrosolar AG, available at www.centrosolar.com.

Failure to observe the requirements in these mounting instructions can lead to the exclusion of all guarantees, warranties and product liability.

The following details, notes and recommendations for action may not be complete and should be constantly checked to see whether they are complete and up-to-date.

## 2 Setting up the work site

Please be especially careful with transport and interim storage of PV modules on the work site and ensure a safe working environment.

**Caution:** Only place transport pallets on sufficiently stable roofs.

The CENIQ system is delivered on heavy transport pallets. Each pallet can carry up to 75 supports including front caps weighing up to 270 kg. A crane will therefore be required at the work site if the pallets have to be lifted onto the roof. The bearing capacity of the roof must be checked in advance to see whether it can withstand the weight of the fully laden pallets in the load area. Consult a structural engineer if in doubt.

## 3 The CENIQ system

### Description of the mounting system

The CENIQ PV mounting system is suitable for mounting on flat-roofs with a roof pitch up to 3° (approx. 5%). This system can be placed without roof penetration. Integrated cable channels, stackable components and the use of few tools considerably reduce the working time on the roof.

The CENIQ system is suitable for fastening framed PV modules 990-1,002 mm wide with a frame height of 35-50 mm. The modules are mounted in horizontal orientation on the mounting racks. The racks provide an elevation of 15° from the roof plane.

The CENIQ mounting system consists of modular mounted units. There are variants for 1-4 modules. The distance between supports results from the static requirements arising from wind and snow load zones.

Table 1 shows the various system variants of the CENIQ.

### Proper use

The delivery should be checked for completeness before commencing the mounting. Electrical installation work that exceeds the range of the safety extra low voltage may only be carried out by electrotechnical specialists. The mounting system CENIQ was designed solely for holding the PV modules. Any other use is regarded as improper. Proper use also includes adhering to the mounting instructions. Centrosolar AG cannot be held liable for damage resulting from failure to observe the mounting instructions, in particular, the safety instructions or improper use of the product.

### Prerequisites

The building owner is responsible for the roof's bearing capacity in connection with the mounting of a Centrosolar photovoltaic system. There is no liability on the part of Centrosolar AG for the structural suitability of the mounting substructure.

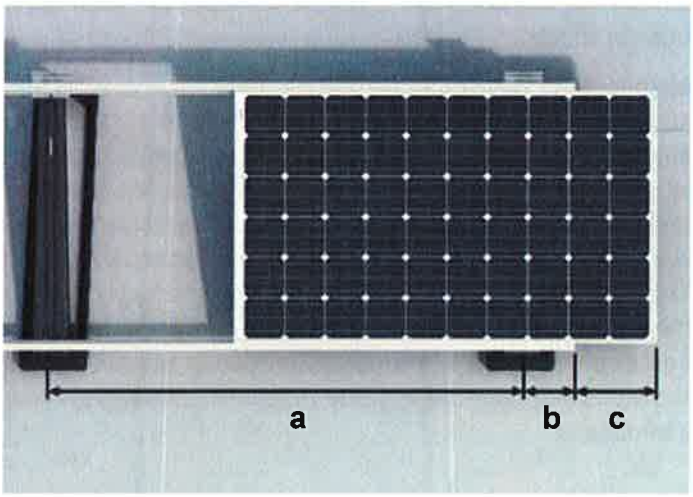



Fig. 1: Dimensioning (dimensions see table 1)

| System | Article number | Module quantity | Number of mounting racks | Profile lengths [m] | Rack distance [m] a | Profile cantilever [m] b | Module cantilever [m]* c |
|---|---|---|---|---|---|---|---|
| CENIQ 1.2 | 56C0350001 | 1 | 2 | 1.5 | 1.00 | 0.25 | 0.08 |
| CENIQ 1.3 | 56C0350012 | 1 | 3 | 1.5 | 0.60 | 0.15 | 0.08 |
| CENIQ 2.2 | 56C0350002 | 2 | 2 | 3.0 | 1.90 | 0.55 | 0.16 |
| CENIQ 2.3 | 56C0350003 | 2 | 3 | 3.0 | 1.17 | 0.33 | 0.16 |
| CENIQ 2.4 | 56C0350011 | 2 | 4 | 3.0 | 0.90 | 0.15 | 0.16 |
| CENIQ 3.3 | 56C0350008 | 3 | 3 | 4.5 | 1.78 | 0.47 | 0.24 |
| CENIQ 3.4 | 56C0350009 | 3 | 4 | 4.5 | 1.34 | 0.24 | 0.24 |
| CENIQ 3.5 | 56C0350010 | 3 | 5 | 4.5 | 1.00 | 0.25 | 0.24 |
| CENIQ 4.4 | 56C0350004 | 4 | 4 | 6.0 | 1.90 | 0.15 | 0.32 |
| CENIQ 4.5 | 56C0350006 | 4 | 5 | 6.0 | 1.42 | 0.16 | 0.32 |
| CENIQ 4.6 | 56C0350007 | 4 | 6 | 6.0 | 1.14 | 0.15 | 0.32 |
| CENIQ 4.7 | 56C0350005 | 4 | 7 | 6.0 | 0.95 | 0.15 | 0.32 |

Table 1
* The measurements relate to a 60-cell module with an edge length of 1.66 m.
When using modules of other dimensions, the module cantilever is calculated as follows:
Module cantilever = (number of modules x module length - profile length)/2

## Roof configuration/ballast plan

**Centrosolar AG will prepare a roof configuration plan for you following order confirmation. It is a binding document required for planning the necessary ballasting. Deviations from the configuration plan following calculation of the ballasting by Centrosolar AG are not permitted.**

Centrosolar AG cannot be held liable for damage arising from deviations from the ballast plan prepared by Centrosolar AG.

The ballast plan shows in the form of ballast levels the necessary additional weight on location of the respective module block. Deviations from this binding ballast plan endanger stability.

Paving stones 200 x 100 x 80 mm (approx. 3.6 kg each) are to be used as ballast and are available from building merchants.

The maximum ballast per rack is 18 paving stones.

Figure 2 shows a section of the ballast plan, where "3.3" stands for the CENIQ system 3.3 (3 modules, 3 racks). The number "11" stands for the number of paving stones needed for ballasting.

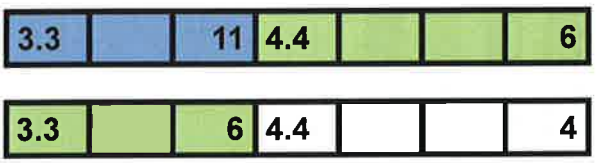



Fig. 2: Section of the ballast plan

The schematic ballast plan in figure 3 applies to roofs without disruptive areas. Any disturbing objects on the roof will lead to discrepancies from the illustrated ballast plan. As a general rule, all modules south of uncovered areas will require higher fastening strength than shielded modules.

**All mounting racks must in principle be fastened via rear strap welding on the roofing membrane.** Supports that must be fastened on the front side as well are individually marked. They are illustrated in the ballast plan with a yellow outline, see figure 3. These are generally located in the edge areas of the installation facing to the south. Further information on this procedure is to be found on the mounting process from page 11.

## Example of gross roof surface load

*Assumptions:*

| | |
|---|---|
| Building height | 10 m |
| Terrain height | 100 m above sea level |
| Snow load | 0.85 kN/m² |
| Distance between rows | 1.7 m |

| Gust speed [m/s] | Roof surface load [kg/m²], row distance 1.7 m | | | |
|---|---|---|---|---|
| | yellow | blue/red | green | white |
| 22.5 | 16.3 | 14.1 | 10.0 | 8.7 |
| 25.0 | 19.9 | 17.1 | 12.1 | 10.2 |
| 27.5 | 23.9 | 20.6 | 14.7 | 12.3 |
| 30.0 | 28.4 | 24.6 | 17.4 | 14.7 |

Table 2

The gross roof surface load is calculated from the addition of the CENIQ mounting system's own weight, the ballasting with paving stones and the module weight (20 kg per module) related to the row distance. The distance of rows to avoid shading will vary in dependence of geographical latitude as shown in Table 3 (p. 10).

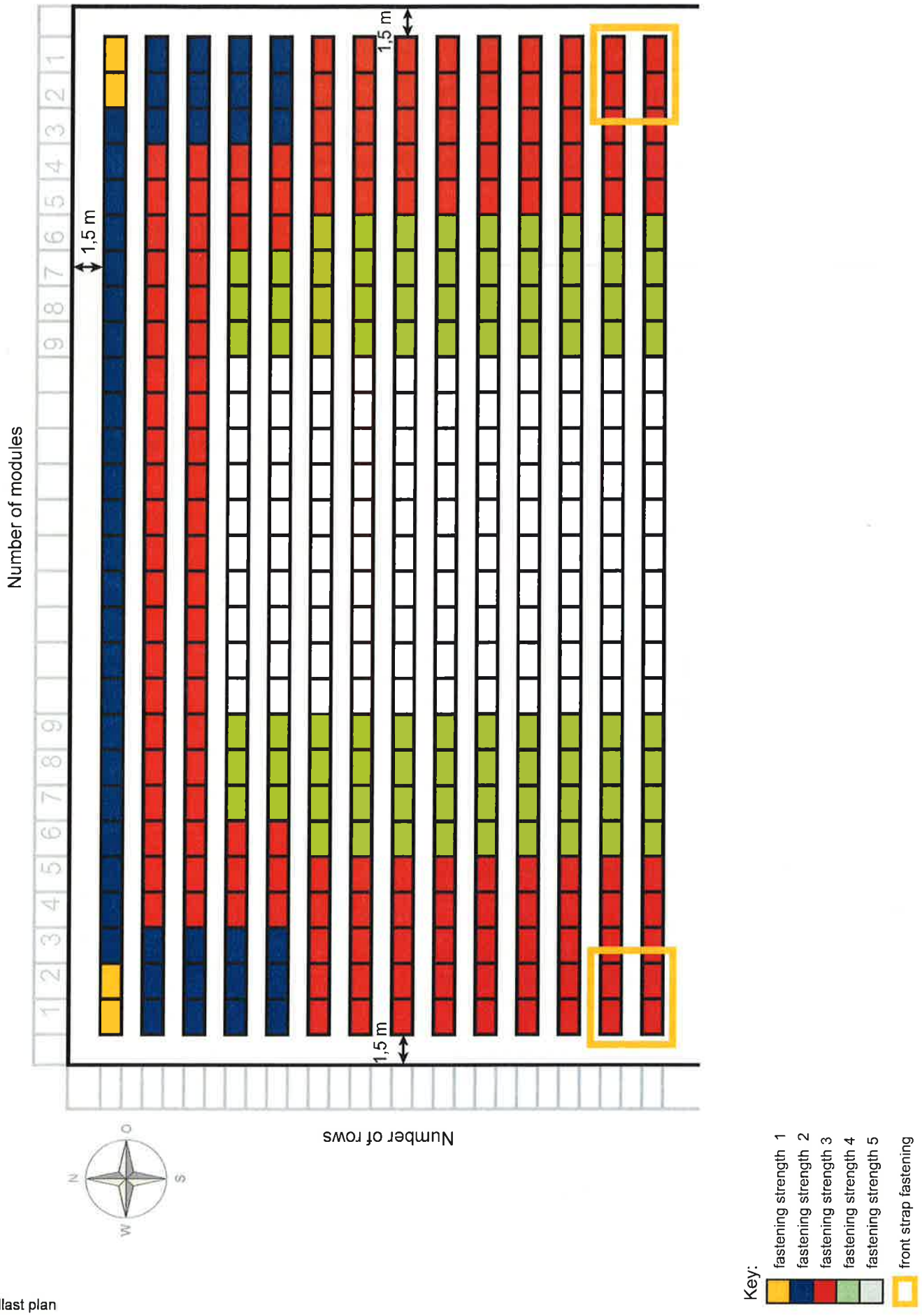



Fig. 3: Ballast plan

## Scope of delivery

| Article No. | | Article | | Article quantities in CENIQ 4.4 56C0350004 | CENIQ 4.5 56C0350006 | CENIQ 4.6 56C0350007 | CENIQ 4.7 56C0350005 | CENIQ 3.3 56C0350008 | CENIQ 3.4 56C0350009 | CENIQ 3.5 56C0350010 | CENIQ 2.2 56C0350002 | CENIQ 2.3 56C0350003 | CENIQ 2.4 56C0350011 | CENIQ 1.2 56C0350001 | CENIQ 1.3 56C0350012 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Modules in system: | | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 |
| 3C2200000 |  | CENIQ rack | | 4 | 5 | 6 | 7 | 3 | 4 | 5 | 2 | 3 | 4 | 2 | 3 |
| 3C2200001 |  | CENIQ front cap | | 4 | 5 | 6 | 7 | 3 | 4 | 5 | 2 | 3 | 4 | 2 | 3 |
| 3C0000012 |  | Wind deflector | | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 |
| 3C1800000 |  | Wind deflector cap | | 4 | 5 | 6 | 7 | 3 | 4 | 5 | 2 | 3 | 4 | 2 | 3 |
| 3C0000002 |  | Module mounting rail | 6.0 m | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | - |
| 3C0000011 | | | 4.50 m | - | - | - | - | 2 | 2 | 2 | - | - | - | - | - |
| 3C0000003 | | | 3.0 m | - | - | - | - | - | - | - | 2 | 2 | 2 | - | - |
| 3C0000004 | | | 1.50 m | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| 3Z0000124 |  | Hammer head screw | | 8 | 10 | 12 | 14 | 6 | 8 | 10 | 4 | 6 | 8 | 4 | 6 |
| 3Z0000120 |  | Twist protection | | 8 | 10 | 12 | 14 | 6 | 8 | 10 | 4 | 6 | 8 | 4 | 6 |
| 3Z0000104 |  | Washer | | 8 | 10 | 12 | 14 | 6 | 8 | 10 | 4 | 6 | 8 | 4 | 6 |
| 3Z0000046 |  | Hexagon nut | | 8 | 10 | 12 | 14 | 6 | 8 | 10 | 4 | 6 | 8 | 4 | 6 |
| 3Z0000117 |  | Drilling screw | | 32 | 33 | 34 | 35 | 23 | 24 | 25 | 14 | 15 | 16 | 6 | 7 |
| 3C0000005 | | | 35 mm | | | | | | | | | | | | |
| 3C0000006 | | | 40 mm | | | | | | | | | | | | |
| 3C0000007 |  | Module clamp | 43 mm | 16 | 16 | 16 | 16 | 12 | 12 | 12 | 8 | 8 | 8 | 4 | 4 |
| 3C0000008 | | | 46 mm | | | | | | | | | | | | |
| 3C0000009 | | | 50 mm | | | | | | | | | | | | |
| 3Z0000126 |  | Selfcutting thin sheet screw | | 12 | 12 | 12 | 12 | 8 | 8 | 8 | 4 | 4 | 4 | - | - |

# 4 General instructions

## 4.1 General instructions

You will receive an adjusted module layout plan/ballast plan from Centrosolar according the planning of the PV system. The Technical Sales Department will be pleased to assist you in planning the system.

The exact measurements of the roof are important. All roof structures with their dimensions (l x w x h) and positions on the roof must be stated exactly.

The direction of the roof slope or the high and low points are essential for planning and must be given in any case.

The functioning of roof structures, particularly safety-related ones such as anchorage points, smoke and heat extraction as well as lightning protection units must not be affected. Therefore, sufficient distance to the solar installation should be taken into consideration for planning.

The shade should also be considered here when preparing the roof layout plans.

Centrosolar AG cannot be held liable for damages arising from erroneous data given by the customer in the technical planning sheet.

### Roof pitch

The CENIQ system is suitable for use on roofs with a pitch up to 3° (approx. 5%). Centrosolar AG must examine the suitability of roofs with a steeper pitch.

### Shade

Urgent attention must be paid to the shade-free positioning of the modules. Centrosolar AG recommends the following row distances depending on the location:

| Latitude | Cities | Row distance [m] | Clearance [m]• |
|---|---|---|---|
| 52° | Amsterdam, London, Berlin | 2.0 | 0.8 |
| 45° | Lyon, Verona | 1.7 | 0.5 |
| 37° | Athens, Lisbon | 1.5 | 0.3 |

Table 3

For existing roof structures a specific shade analysis has to be carried out to consider additional shading distances.

### Insulation and roof panel

The continuous pressure rating (point load capacity) of the insulation and the roof membrane should be checked before mounting the PV system. In case of roofs insulated using mineral wool, a suitable building protection mat measuring at least 1,250 x 300 x 6 mm is to be placed under the racks.

The compatibility of the building protection mat with the roof surface material must be specially examined for each project. Centrosolar will not provide any warranty for this.

The roof surface material is generally chemically compatible with the mounting rack. Should the available roofing membrane nevertheless turn out to be incompatible in direct contact with plastics from other work groups, we recommend a separating layer of the same material.

### Cleaning the roof surface

All relevant roof parts, particularly the roof cover should be cleaned before mounting the PV system. Dirt between the bearing face of the rack and the roof cover may affect stability.

Ensure by way of regular inspections after commissioning the system that dirt is removed immediately.

### Notes on CENIQ assembly

There is a danger of shifting and/or tipping over due to the entry of wind in the case of systems that have not been fully mounted. Ensure that after module installation all parts of the system are secured by ballasting, fixation straps and wind deflectors.

A distance of 10 mm is recommended between CENIQ systems to account for thermal expansion.

**EPDM- fastening by straps:**

The EPDM strap supplied by Centrosolar has a bitumen layer underneath. After feeding through the CENIQ mounting rack, the layered side is welded together in such a way as to create a weld seam of at least 4 cm. The remaining layered length of the strap can now be welded to the bitumen roof.

**Caution:** The enclosed instructions from PDT for the Resitrix MB roofing membrane must be observed.

## 4.2 Electrical instructions

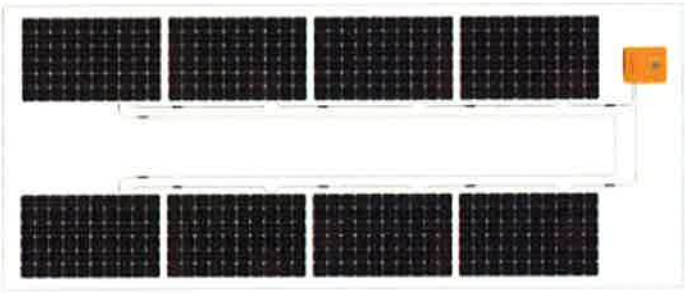


Fig. 4: Connection

### Laying cables

Conductor loops must be avoided when laying the DC cables. Plus and minus leads in a string should be laid as close as possible to one another in order to avoid induced tension (indirect lightening protection).

### Lightning protection

We generally recommend connecting electrically conductive components of the PV system via a functional earthing with the potential equalization.

If there is a lightning protection system in the building, check to see whether the PV system is within the protected area of the already present lightening protection. The separation distance according to DIN EN 62305-3 (or your valid local legislation) between the PV system (incl. cabling) and the lightening protection system must be adhered to.

If the separation distance cannot be maintained, electrically conductive construction components must be integrated into the existing lightning protection system by a lightning protection specialist.

## 4.3 Static boundary conditions

The statics of the roof must support the mounting of a photovoltaic system. Its actual condition must comply with the structural details for the build. Check the static feasibility of the roof configuration/ballast planning.

Insist on removing any relevant defects before commencing the mounting and carry out another inspection afterwards to determine its condition.

Pay attention during the build that temporarily stored material is distributed so as not to exceed neither the local nor the total load reserves on the roof.

### Areas of use:

- Modules with edge lengths of 990 mm
- Module mount in landscape orientation
- Roof pitches +/- 3°
- Building heights up to 20 m
- Gust speed pressure < 1.9 kN/m²
- Snow load < 2 kN/m²

Please note that depending on climatic conditions, not all systems can be used. The number of mounting racks and ballast per support for each module array (CENIQ system) will vary depending on the location.

### Connection parameters for the strap fastening

- Cohesive resistance: ≥ 250 N/50 mm

The connection parameters can be found in the manufacturer's data sheets for the moisture-proof roof sheet used and must also be inspected by a specialist fitter. The inspection relates to the connection between the already installed moisture-proof roof sheet and the connecting strap to be applied. Please observe the instructions from the roofing membrane manufacturer.

### Edge distances:

An edge distance of 1.5 m to the edges of the roof is to be maintained.

**Special statics will be required if mounting is to take place outside the static boundary conditions listed here.**

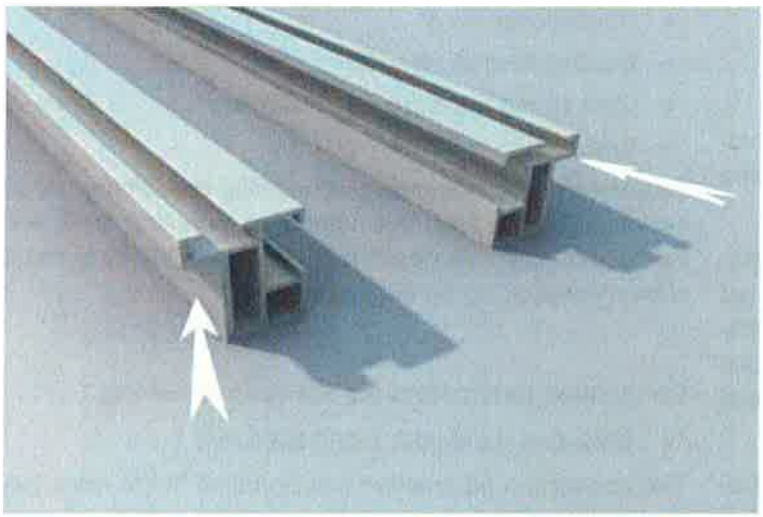
Please address any questions to your local Centrosolar offfice.

# 5 Mounting process

## 5.1 Mounting with ballasting

**You will need the following tools for the mounting:**

- Cordless screwdriver
- Socket spanner 8 mm, 17 mm
- Ratchet
- Folding meter or measuring tape
- Hand-held welding torch
- Crayon or scriber
- Torque wrench



1 - Alignment of assembly rails

Place two assembly rails together so the ridges are facing outwards and the hammer-head screw location groove faces above.



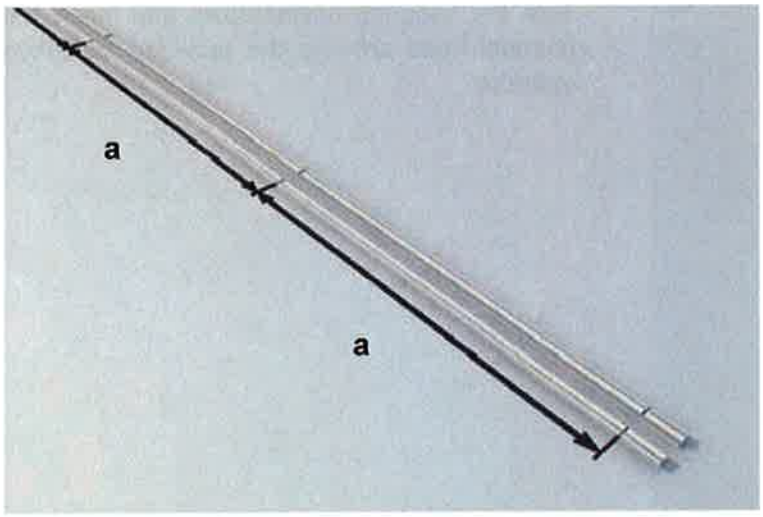

2 - Marking the assembly rails

Place the marks for the screws on both assembly rails using a suitable crayon or scriber. The respective distances are shown in table 1 on page 6.

**Example:**

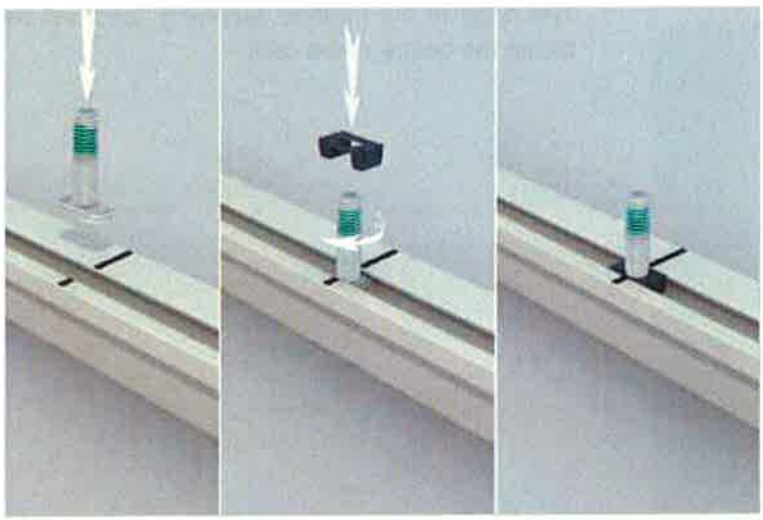
For CENIQ 4.4, the first mark is placed at a distance (b) of 0.15 m from the start of the assembly rails followed by three further marks at equal distance of 1.90 m (a) producing a distance to the end of the mounting rail of 0.15 m.

See table 1, page 6.




3 - Marking the distance of the racks

Mark the distance of the racks (a) according to table 1.



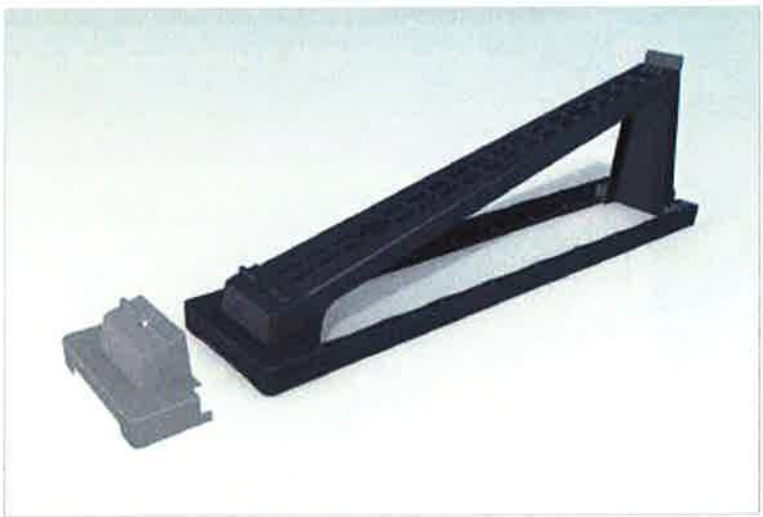
4 - Using the hammer-head screw and twist protection

Place the hammer-head screws (M10) on the marked places into the groove and twist them a little to prevent them from falling out.

Place the twist protection on the hammer-head screw.

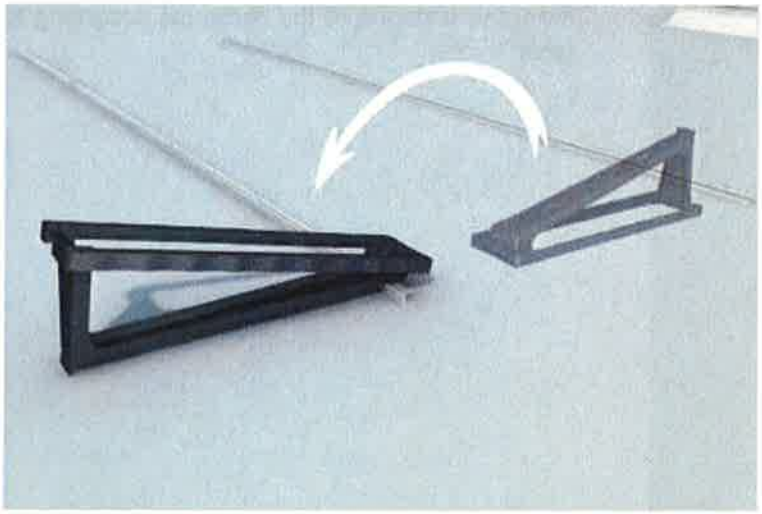
Now fix the twist protection in the groove.

The hammer-head screws are fitted with a micro-encapsulated adhesive and assume the function of the security nut. They can only be used once.



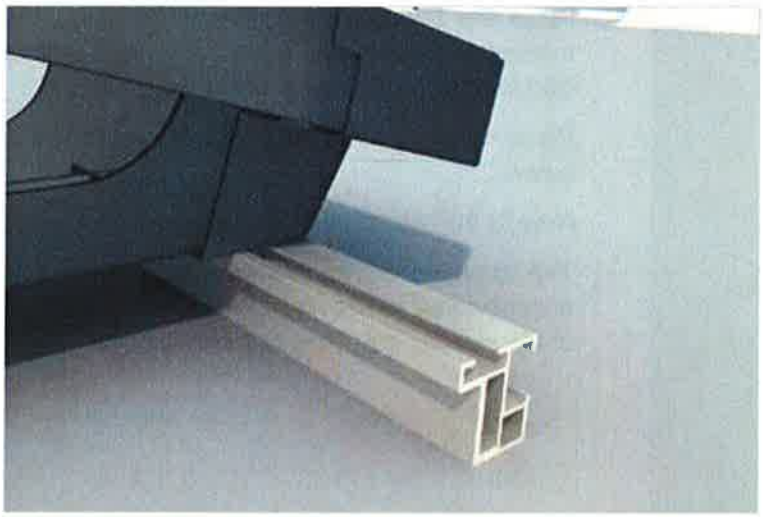
5 - Mounting of the front cap

Put the front cap on the mounting racks.



6 - Rotating the mounting rack

Turn the supports upside-down and insert the hammer-head srew in the provided mounting aperture.



7 - Direction of the profile ridge

The ridge of the module assembly rail must be facing the centre of the rack.



8 - Screwing the assembly rackl

Fit the hammer-head screws with washers and nuts.



9 - Tightening the nuts

Tighten the nuts with a torque of 15 Nm.



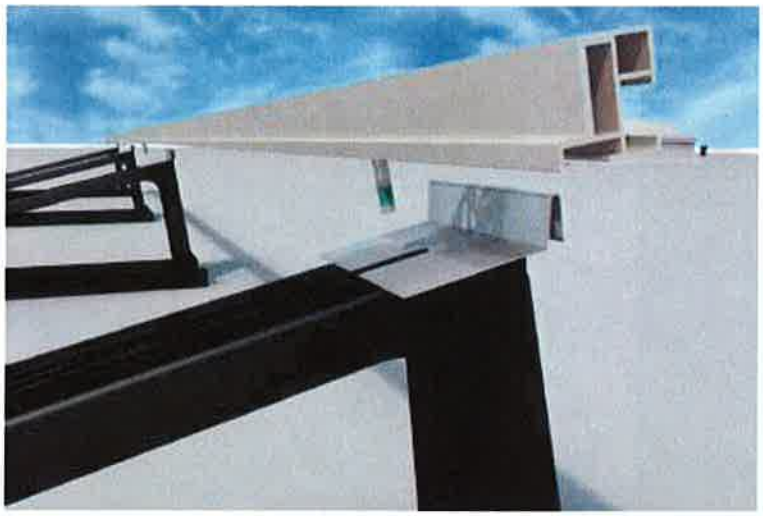
10 - Rotating the frame

Once all mounting racks are firmly connected to the assembly rail, these are placed back on foot by turning them 180°.



11 - Placing the wind deflector cap

Stick wind deflector cap on support nose.



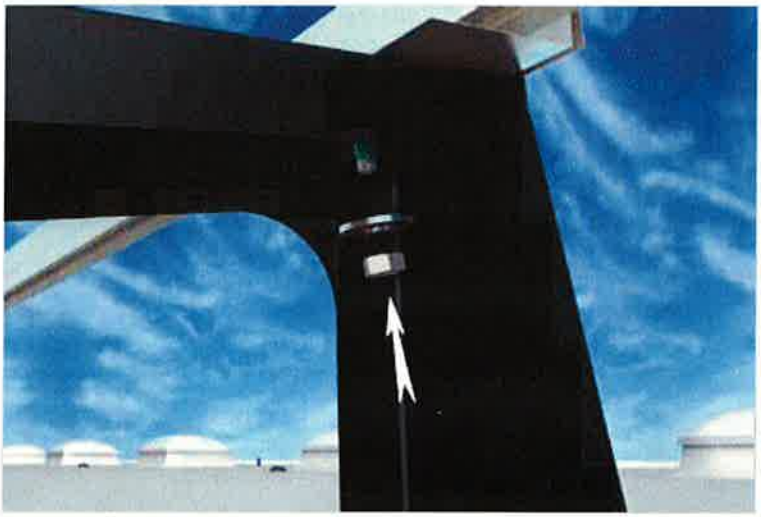
12 - Inserting the hammer-head screw

Place the rail with pre-mounted hammer-head screw in the slot provided. The ridge of the module assembly rail must be facing the centre of the rack.



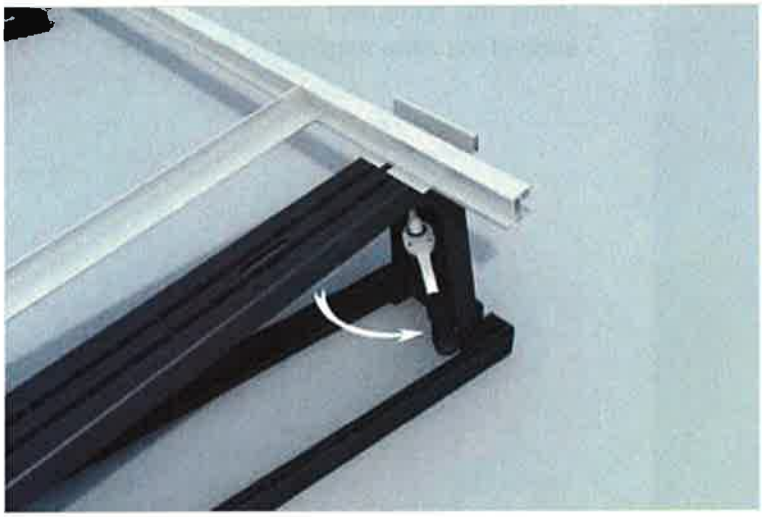
13a - Inserting the distance rails

Insert the assembling jigs on both sides between the mounting rails in order to establish the exact distance to one another.



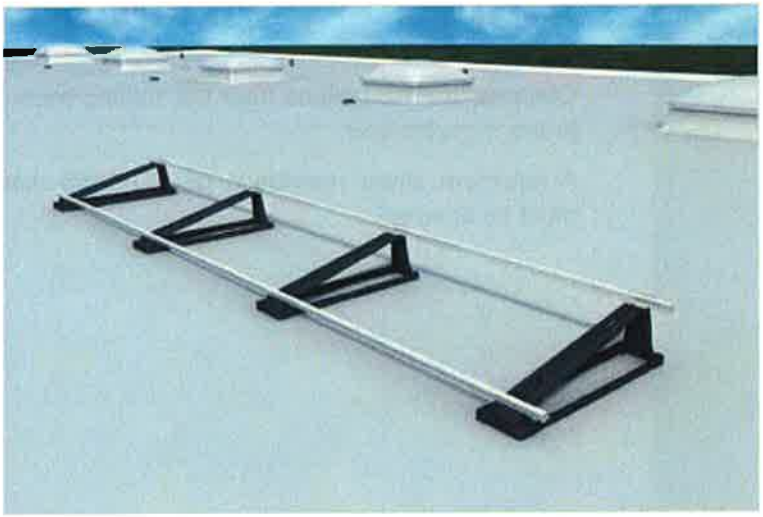
13b - Fixing the hammer-head screw

Fix the washer and the nut to the hammer-head screw.



14 - Tightening the screw fitting

Tighten the nuts with a torque of 15 Nm.



15 - Aligning the roof frame

Align the frame according to the roof configuration plan.

Here, a distance of 1.5 m to the edge of the roof is to be maintained unless stated otherwise.



16 - Feeding through the strap

The mounting rack must be secured against shifting. For this, raise the rear of the mounting rack and feed through the strap of roofing membrane material.

**The strap should be provided by the customer and correspond to the material used for the roofing membrane laid on the roof.**

The strap should measure at least 140 x 220 m.

Do not move the racks when feeding through the straps.

Centrosolar AG will provide a bitumen-coated EPDM strap for bitumen roofs.



17 - Welding the strap to form a loop

Using the hand-held welding torch, weld both ends of the strap together to form a loop.

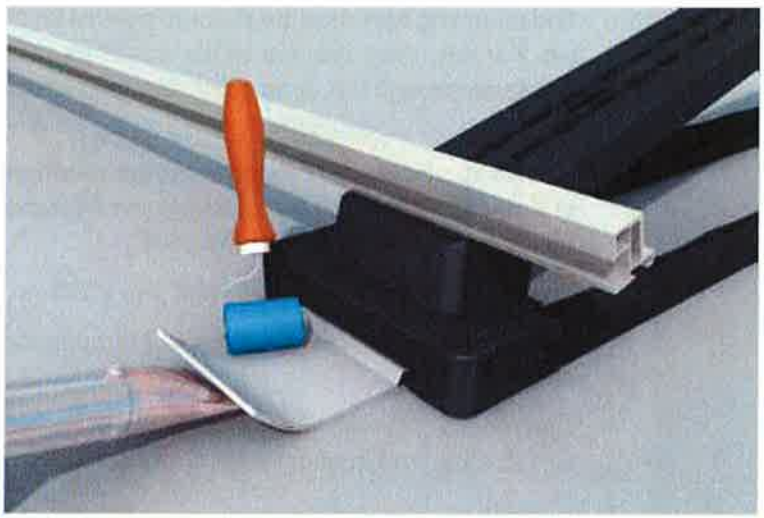


18 - Welding on roofing membranes.

Now weld the welded strap to the roofing membrane.

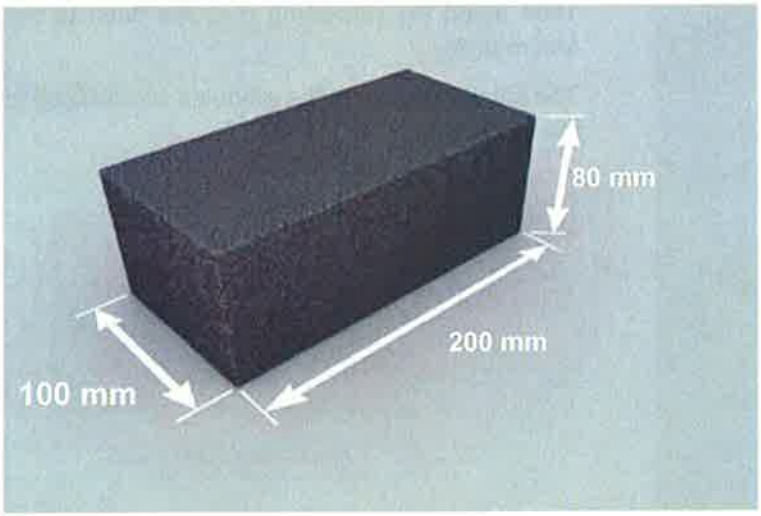
Observe the instructions from the roofing membrane manufacturer.

A minimum shear resistance of 250 N/50 mm must be ensured.



19 - Front attachment

If front attachment is required, this is carried out according to the same principle as in the previous steps.




20 - Paving stone dimensions

Ballasting is carried out according to the ballast plan with right angle paving stones.

(200 x 100 x 80 mm)



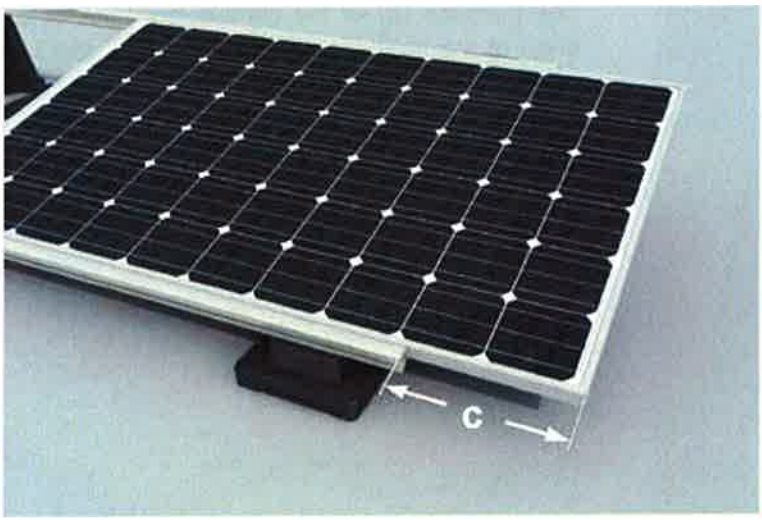
21 - Ballasting

For this, stack the paving stones in the mounting rack.

Fill up the lower part of the rack first before commencing a second layer.

Maximum number of stones per row: lower row: 9, middle row: 6, upper row: 3.

Adhere to the required load per mounting rack according to the ballast plan.




22 - Module mounting

Lay the first module on the bases of the module mounting rails.

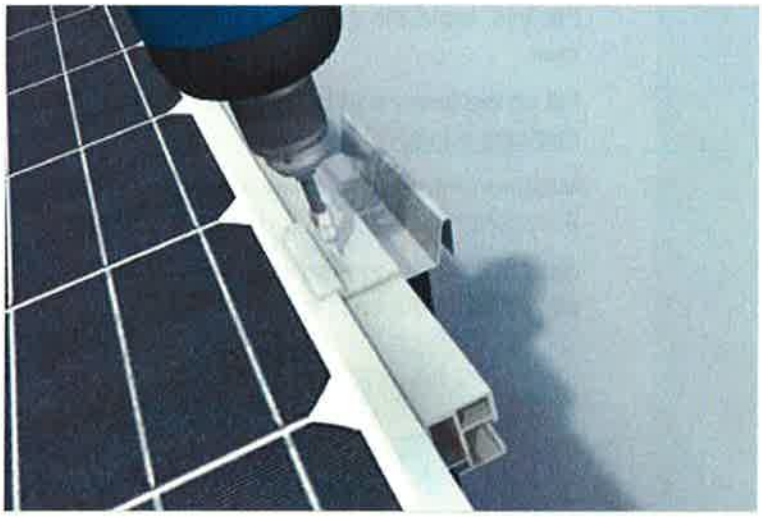
Set up the module cantilever (c) according to table 1, page 6.



23 - Module mounting

Then insert the remaining modules flush to the first module.

The junction boxes of the modules should face to the same side.



24 - Fastening module clamps

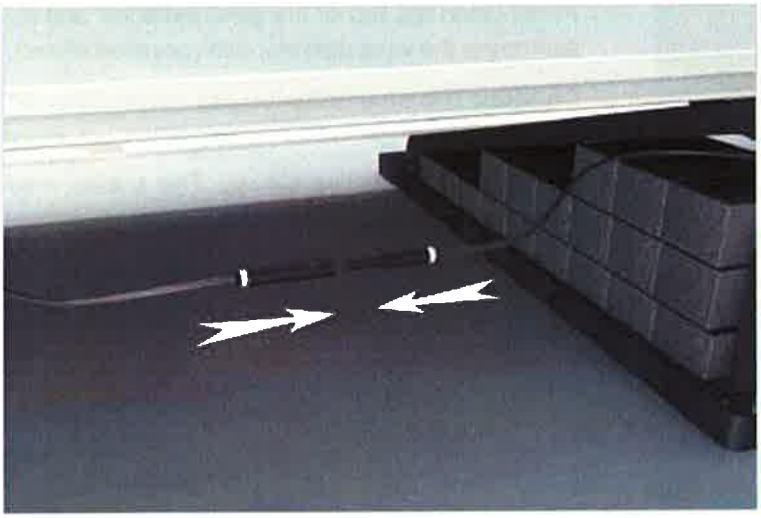
Fasten module clamps. Each module is fastened by four module clamps. For this, self-cutting drilling screws are used and screwed directly in to the module mounting rail.

**Note:** Remove metal chippings from the roof.



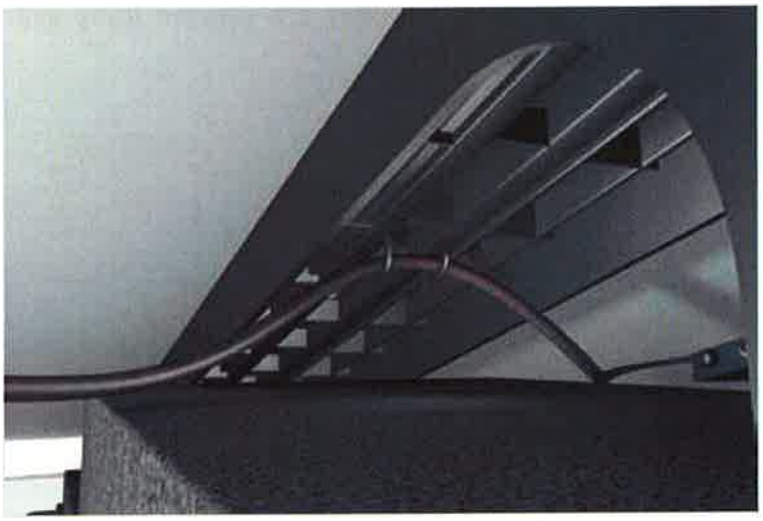

25 - Clamp distances

The distance (d) of the clamps from the outer edge of the modules is 1/4 of the total module length.



26 - Connectors

Interconnect the modules by joining the plugs.



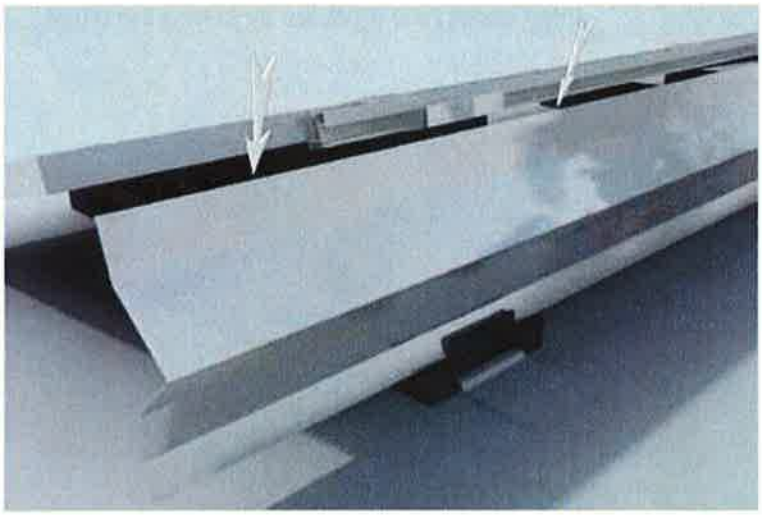
27 - Laying cables

Insert the bundled cables into the supports in the mounting racks. **The connector may not be left on the roof as it may lead to leakage current due to stagnant water.**



28 - Inserting the wind deflector

Insert the wind deflector sheet in the lip at the rear bottom of the rack. The sheet must fit flush with the outer edges of the module row.

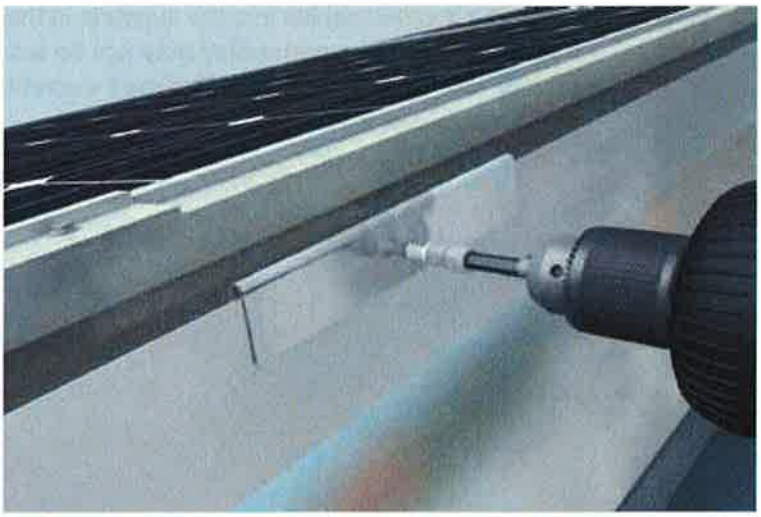


29 - Inserting the wind deflector

Press down the top of the wind deflector and insert under the wind defector cap (bevelled sheet).

**Caution:** The wind deflector may not be distorted irreversibly.

**Note:** Wear protective gloves. The sheets may have sharp edges.



30 - Screwing in a wind deflector

The wind deflectors are secured using self-cutting screws.



31 - Screwing the wind deflectors

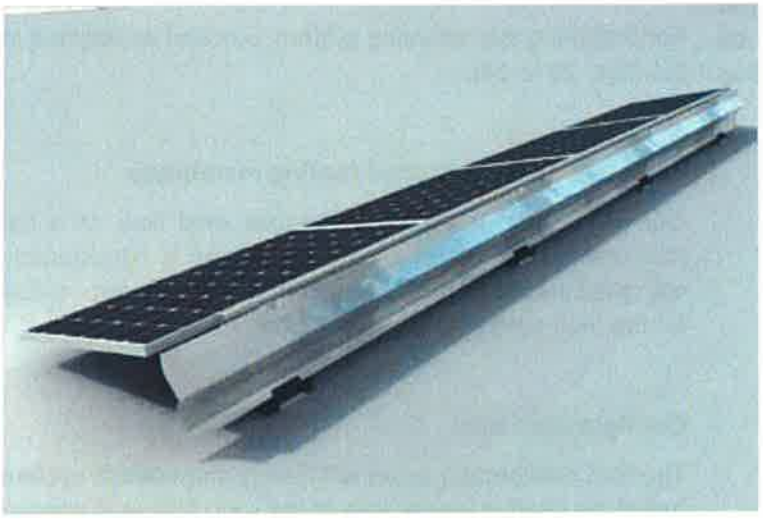
Section showing the screwing in of a wind deflector.



32 - Screwing the wind deflectors

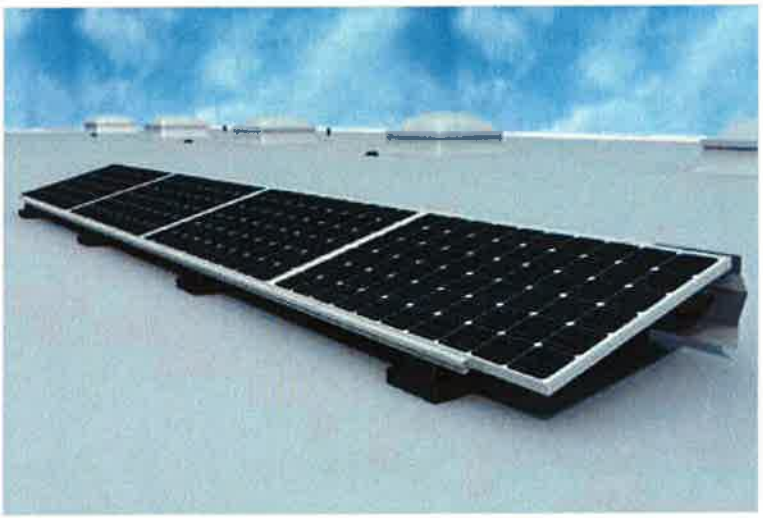
Connect the individual wind deflectors using four self-cutting screws - two on top and two at the bottom.

**Note:** When mounting the wind deflectors, self-cutting thin sheet screws (articl no. 3Z0000126) have to be used.



33 - View of the wind deflectors

Fully assembled wind deflectors. Please remember to remove metall chippings from the roof surface.



34 - Ready mounted PV generator

Completed CENIQ system

## 5.2 Mounting without ballasting

The CENIQ mounting system can be installed via the combination of the rear strap and front strap also without ballast on **flat roofs with synthetic membrane cover (**roof pitch up to 3 degrees). A requirement for this is the proper fastening of the current roofing membrane in accordance with the specific national norms and requirements (e.g. Eurocode EN 1991-1-4).

### Connection parameters for the strap fastening

- Peel resistance ≥ 150 N/50mm
- Shear resistance ≥ 250 N/50 mm

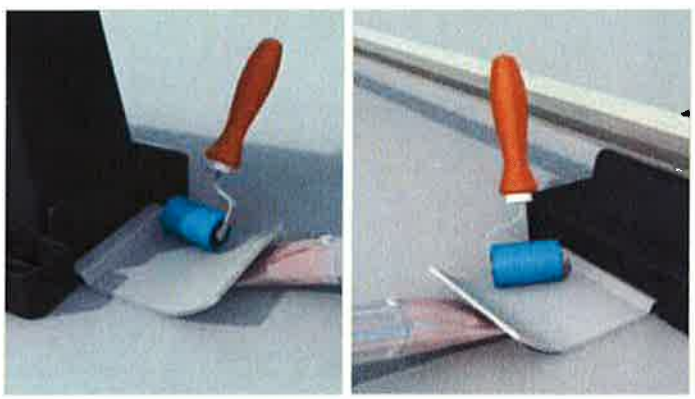
The connection parameters can be found in the manufacturer's data sheets for the roofing membrane employed and must also be inspected by a specialist fitter. The inspection relates to the connection between the already installed moisture-proof roof sheet and the connecting strap to be applied. Please observe the instructions from the roofing membrane manufacturer.

### You will need the following tools for the mounting:

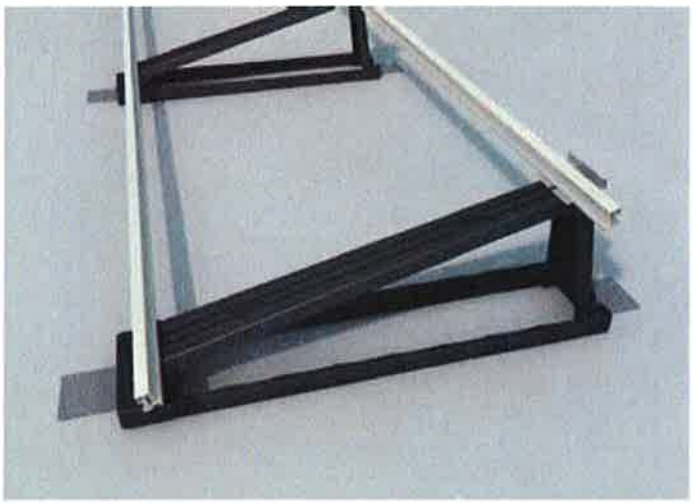
- Cordless screwdriver
- Socket spanner 8 mm, 17 mm
- Ratchet
- Folding meter or measuring tape
- Hand-held welding torch
- Crayon or scriber

### Mounting process

Mount the CENIQ mounting system as described under 5.1 (figs. 1 to 18). A front strap should also be fitted using the same principle as decribed for the rear strip in chapter 5.1.



Fitting straps



Aligned CENIQ mounting system with front and rear straps

For preparing the mounting system, proceed as decided in 5.1 (figs. 22 to 34).

### Influence on the installed roofing membrane

Our PV system positively influences wind flow on a flat roof, particularly the leading edge vortex is considerably disrupted in case of flow over a corner, which is responsible for the high suction levels around corners and edges.

### Configuration plan

The roof configuration plan will clearly show which system has to be used in which area of the roof. This is illustrated as in fig. 2, page 6 but with no details on the ballast. Due to the strap fastening, only the weight of the module and the substructure burdens the roof. The load on the roof surface with a row distance of 2.2 m thus amounts to **8 kg/m²**.

## 6 Commissioning the system

Commissioning the photovoltaic system is part of the expert and proper construction and installation. This may only be carried out following a careful visual examination and a professional electrical inspection. A record should also be prepared when commisioning the system.

Bear in mind the following checklist when taking the installation into use:

**Visual examination**

- Anchoring of the components to the roof structure
- Cable installation on modules, generator connection boxes, DC disconnection points, inverters
- Potential equalization (if available)

**Electrical examination**

- String open-circuit voltages
- String short-circuit currents (use load break switch)
- PV generator open-circuit voltage
- Voltage drop in fuses (for PV installations with string fuses)
- Insulation resistance of the PV generator
- Insulation resistance of the DC main lines
- Insulation resistance of the AC line
- Loop resistance of the alternating current circuit

**Record**

- Declaration of the installation operator
- Location of the installation
- Technical details on the photovoltaic system
- Results of the visual examination
- Results of the electrical examination
- Module layout plan
- Module interconnection plan
- Roof configuration plan
- Ballast plan
- Completion report signed by the installer

**Please observe**

This list is only for your information. It is not necessarily complete.

Please also observe IEC 62446: "Grid connected photovoltaic systems - Minimum requirements for system documentation, commissioning tests and inspection" or other similar regulations that apply in your country.

## 7 Guarantees and warranties

Guarantees and warranties may only be claimed if the installation and the commissioning of the photovoltaic system are clearly carried out by specialist persons. Guarantees and warranty claims shall be excluded in case of:

- non proper and professional installation of provided CENIQ components;
- improper use or impermissible change of the components delivered;
- usage of individual components not according to installation conditions;
- usage of statically unexamined and thus unsuitable substructures for module installation;
- deviations in the mounting from the mounting instructions;
- failure to take account of constructional requirements regarding snow and wind loads;
- mounting of defective components.

For information on guarantees and warranties, please also read the warranty declaration by CENTROSOLAR AG available at: www.centrosolar.com

## 8 Disclaimer

Photovoltaic systems consist of electrical and mechanical components that are combined on location into an overall system. CENTROSOLAR AG cannot monitor the adherence to the advice and guidelines in these mounting instructions. CENTROSOLAR AG cannot therefore accept any responsibility or liability for damage due to improper installation, improper operation, use in a stressful environment (e.g., in a stable) or improper use of the photovoltaic system or individual components.

We expressly point out that failure to observe the requirements of these mounting instructions even in the case of individual components will lead to the exclusion of all guaranty, warranty and product liability claims with respect to the entire system.

**Notes:**

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# Sunshine is our business.


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The general terms and conditions and technical introductory remarks of CENTROSOLAR AG available under www.centrosolar.com apply.



925210001 Mi CENIO EN v2.0 SME 10/2011

CENTROSOLAR

# CENIQ

Flat-roof mounting system

**Can be mounted without ballasting ▪ No roof penetration**







**Quality**
**Made in Germany**

## Aerodynamic flat-roof mounting system for photovoltaic modules

The CENIQ is the only flat-roof mounting system in the world that can be installed without roof penetration and ballasting - suitable for plastic-covered flat roofs with a pitch up to 3°. Ballasting is also an alternative. The modular construction and optimized number of components made of recycled synthetics, aluminium and stainless steel enable simple and fast mounting.

**System advantages:**
**No module row connectors - no limitation to installation layout and distance between rows - no prevention of drainage or snow removal.**

- Can be mounted without ballasting
- 8 kg/m² with ballast-free mounting
- Optimization of the roof configuration by flexible module arrangement
- Low surface load due to wind tunnel-tested aerodynamic system
- No roof penetration
- Individual module set-up possible
- Simple and fast assembly
- Durability due to the use of high-quality materials
- Efficient ventilation

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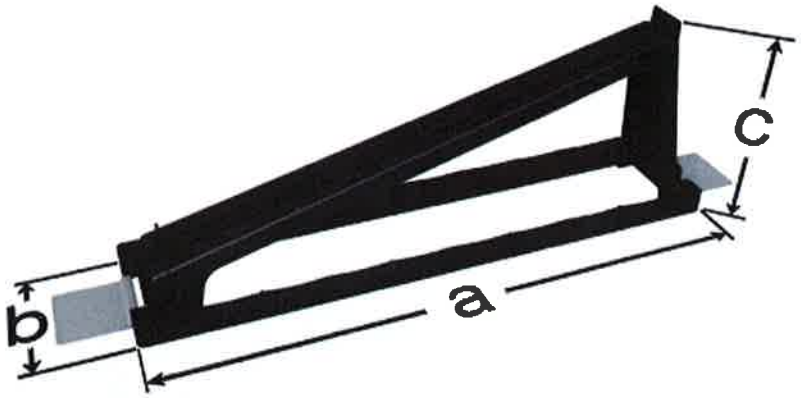


Recycling
Plastic

chlorine-free
halogen-free

a = 1196 mm
b = 265 mm
c = 369 mm

## Technical specifications

| | |
|---|---|
| System inclination | 15° |
| Max. roof inclination | 3° (approx. 5% inclination) |
| Floor space for mounting racks (L x W x H) | 1,196 x 225 x 369 mm |
| Weight of mounting system incl. module | approx. 8.0 kg/m² |
| Rail dimensions for 4, 3, 2 and 1 module system | 6.0; 4.5; 3.0; 1.5 m |
| PV modules, 60 cells (l x w x frame height) | 1,660 x 990-1,002 x 35-50 mm |
| Tools | cordless screwdriver/nut, torque wrench, hand-held welding torch |
| Configuration plan | to be prepared by your local Centrosolar office |
| Ballasting with rectangular paving stones and rear strap fastening | provided by the customer, 200 x 100 x 80 mm |
| Strap fastening on both sides, material such as available roofing membrane | provided by the customer, 140 x 200 mm → without ballasting (only plastic roofs) |
| Building protection mat | provided by the customer if necessary |
| Wind load zone | check with you local Centrosolar office |
| Snow load zone | check with you local Centrosolar office |



Example CENIQ 4.4:
for 4 modules with 4 mounting racks

as of 10/2011 Errors and omissions excepted. Technical changes reserved.

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