

# MONTAGEANLEITUNG INSTALLATION GUIDE



**SOLARA STARTER PACK**

**SOLARA PROFI PACK**

**SOLARA PREMIUM PACK**

**SOLARA POWER PACK**

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## 1 Guidelines for this installation guide

Congratulations on your new SOLARA complete set. You have purchased a premium product that is easy to install and features carefully matched components. You are going to have a lot of fun with this product and the natural and free energy from the sun.

**Information that affects your safety or the safety of the device is highlighted.**



### **Please note:**

Failure to observe the information in the installation instructions may void all warranties, guarantees and product liability claims. The following instructions, notes and recommendations are not intended to be exhaustive and are under constant review to ensure they are complete and up to date.



### **General safety information**

SOLARA complete sets should be mounted and installed by a specialist. People with technical skills though should be able to mount and install a solar system by themselves.

Do not install any components of this complete set in spaces where easily flammable gas mixtures might form (e.g. due to gas tanks, paint, varnish, solvents and fuel). This applies especially to RVs and boats. Do not keep any of the substances listed above or similar substances in spaces where components of a SOLARA complete set are mounted.

Do not touch current-carrying components. Always use well insulated tools when the solar panels are not covered.

Always keep solar panels safely stored. If items are dropped onto a solar panel or if

the panel falls over, the glass can break and the panel be destroyed. **Repair work is not possible.** Thus only unpack the panel when it's about to be installed.

We strive to be the leader in innovation and research, while continuing to improve our products. For this reason we reserve the right to make changes to this installation guide without prior notice.

### **Tools needed**

For the installation of this complete set the following tools are required:

- Cordless screwdriver
- Screwdriver for the electrical connections
- Drills 3.5 mm and 4.5 mm
- Folding rule and marking pin

### **The SOLARA complete set includes the following items:**

- Solar panel(s)
- Solar charge controller
- Roof grommet with fitting
- Two mounting spoilers per panel
- Glue set SOLARA FIX PACK
- DCconnect-C connecting cable (panel/charge controller)
- DCconnect-B connecting cable (charge controller/battery)
- Small parts and installation material
- Installation guide

Included in two-panel sets only:

- DCconnect-M connecting cable (panel/panel)
- MultiContact Y-plug +
- MultiContact Y-plug -

## 2 Installation of the SOLARA complete set

### **Recommendations for handling and installing the solar panel**

Although this solar panel has been designed to be sturdy, it is preferable to han-

dle it with care:

- Significant irreparable damage can be caused by impacts on the front or back surface.
- Always keep the solar panel flat (do not bend, twist etc.).
- Never disassemble the solar panel.
- Do not weld the frame.
- Do not use a light concentrator. Such a device could destroy the module.
- Use insulated tools.

### **General safety guidelines**

The silicon cells in this solar panel generate an electrical current when their front side is exposed to sunlight. Although the voltage and current from a single module are low, touching the terminals or wiring can still cause shocks or burns. To avoid any accident, turn the front of the module away from the sun or any intense source of light when wiring. If this is not possible, place an opaque material (cardboard, cloth etc.) on the front of the solar panel for the entire time needed for the work, including wiring all the other components in the system.

### **Installation guidelines**

For maximum output, face the module towards the equator (southwards in the northern hemisphere and northwards in the southern hemisphere). The tilt angle depends on the application:

- For regular power supply throughout the year, the tilt angle from the horizontal should be equal to latitude + 15 to 20° in temperate regions. In tropical areas, the tilt angle should be equal to the latitude but should never be less than 10° so that water and dust will be carried away naturally.
- For any other type of application, consult a specialist to determine the best position for requirements.

In all cases, make sure that no shadow from anything near the panel (grass, trees, buildings etc.) will cover any part of the panel

when the sunshine is brightest (mainly in midday) in any season.

### **Guidelines for mounting and installation**

Install the solar panel horizontally, or vertically with the junction box at the top. Vertical mounting with the box at the bottom, where water might accumulate in or around it, should be precluded.

Use stainless steel screws and fastenings only. The cable glands or conduit fasteners should preferably be placed on the side facing downwards. If this is not possible arrange the wiring to avoid drops of water accumulating.

The mounting surface must be even, installation on a rounded or tilted surface is not permitted.

The installed solar panel must not block ventilation openings on the roof of appliances that are already in place. Additionally, the working radius of existing automatic satellite antennas and similar appliances should not be compromised.

### **Installation of the SOLARA complete set One solar panel layout**

If you have purchased a complete set with one solar panel, connect the connecting plugs with the DCconnect-C connecting cable (panel/charge controller, see fig. 1). Fix the plugs to the panel frame using a zip tie. In doing so, please make sure that the plugs will not come in contact with backed-up water.

### **Installation of the SOLARA complete set Two solar panel layout**

If you have purchased a complete set with two solar panels, these must be connected either in series (24 V, only with MPPT-charger!) or in parallel (12 V) depending on the type of application.

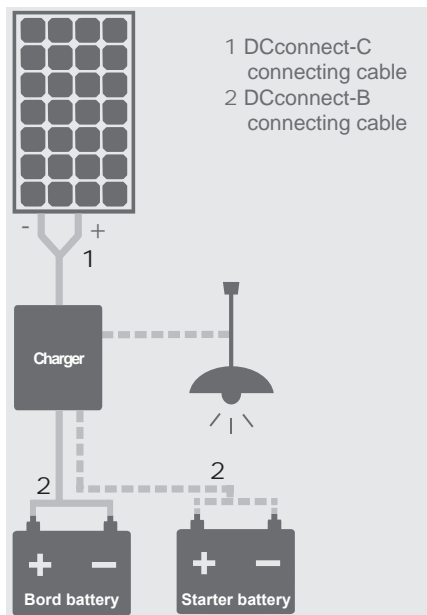


Fig. 1: connection principle 1 panel

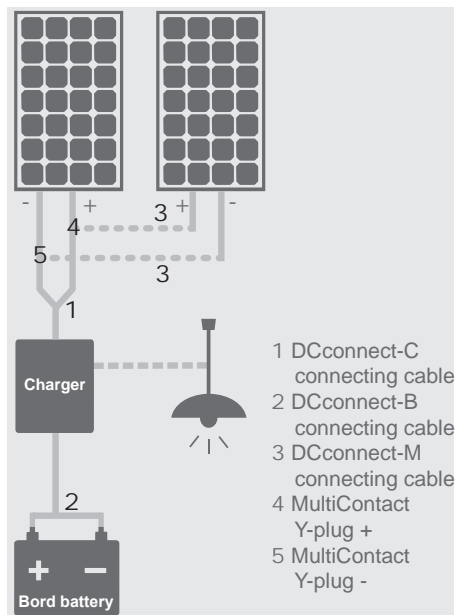


Fig. 2: connection principle 2 panels in parallel

### Connecting two solar panels in parallel:

Connect the solar panels to the MultiContact Y-plugs and connect the plugs using the DCconnect-C connecting cable (panel/charge controller, see fig. 2). If the distance between the panels is too large, please use the DCconnect-M connecting cable. Fix the plugs to the panel frame using a zip tie. In doing so, please make sure that the plugs will not come in contact with backed-up water.

### Connecting two solar panels in series:

Connect the plug of the first panel with the plug of the second panel. If the distance between the panels is too large, please use the DCconnect-M connecting cable (panel/panel, s. fig. 3). Open plugs of the panels can now be connected using the DCconnect-C connecting cable (panel/charge controller). Fix the plugs to the panel frame using a zip tie. In doing so, please make sure that the plugs will not come in contact with backed-up water.

### Guidelines for installation and handling of the ABS mounting spoilers

Although this product has been designed to be sturdy, it is advisable to handle it with care.

The spoilers have to be mounted in such a way that no airflow can reach under the panels.

### Use only the components of the SOLARA FIX PACK to glue the ABS mounting spoilers.

Always keep the mounting system flat (do not bend, twist, etc.).

It is necessary to pre-treat the surface to ensure optimal bonding results.

### Preparing the surface/installation

Oil, fat and other dusts must be completely removed from the surface to ensure proper adhesive bonding.

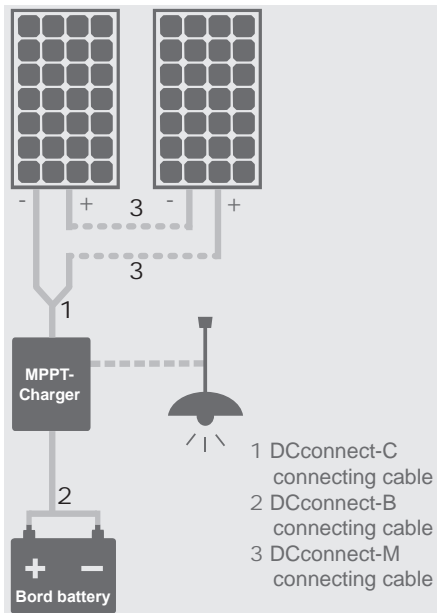


Fig. 3: connection principle 2 panels in series



**Please study the mounting and preparing instructions that come with the SOLARA FIX PACK!**

### Connecting the profile with the panel frame

Self-sealing stainless steel screws (size: 4.2 mm x 40 mm) are supplied and should be used to screw the mounting spoiler or the edges to the solar panel.

First, pre-drill the labelled drill holes on the mounting troughs to a size of 4.5 mm. Then, copy the drill holes onto the panel frame (by marking it or drilling lightly).

**HINT: Before drilling, check the position of the screw holes on the panel frame.**

Pre-drill the screw holes in the panel frame to a size of 3.5 mm.

**The solar panel laminate must not be damaged by the drilling under any circumstances.**

Remove the protective foil from the spoiler (this is more difficult once the module has been installed).

Screw mounting spoiler to the solar panel. Screw tightening torque is approx. 8-10 Nm. You should only use the special self-sealing screws provided by SOLARA in order to prevent moisture from entering the spoiler cavity. If using other screws, seal them carefully and check the sealing every year.

### Glueing to a van/caravan or other even surfaces

Please read the detailed adhesive bonding instructions provided with the SOLARA FIX PACK.

- Place the panel/spoiler unit in its final position on top of the roof.
- Mark the position of the panel/spoiler unit with adhesive tape or a felt-tipped pen.
- Put the glue on the panel/spoiler unit or inside of the marked area.
- Place the panel/spoiler unit inside the marked area once again and press downwards on it slightly.



**Do not move the vehicle for 24-36 hours. Be advised that the adhesive will take longer to harden in winter with low air humidity than in summer.**

### Guidelines for installation and handling of the ABS roof grommet

The hole for the roof grommet needs to be positioned in a way that the roof grommet on top can be glued on without any problems. Ideally and possible with almost all vehicles, it can be installed in a wall cupboard on the side of the vehicle. Check where the drill will come out and drill with a small drill from the inside out. The final hole will be drilled from the outside of the vehicle.

Prepare the surface as described for the mounting spoilers (see p. 13). Insert the

capped end of the DCconnect-C connecting cable (panel/charge controller) into the grommet and fasten the waterproof fitting of the roof grommet. Guide the connecting cable to the inside of the vehicle and glue on the roof grommet.



**Do not move the vehicle for 24-36 hours. Be advised that the adhesive will take longer to harden in winter with low air humidity than in summer.**

### Installation of the inside cables

Ideally lay the inside cables in existing cable channels. The length of the cable should be as short as possible. Should it be necessary to lengthen the included DCconnect-C connecting cable (panel(charge controller), the wire size must be enhanced (because of power losses).

### Installation and mounting of the charge controller



**See installation guide attached to the charge controller**

Use the included DCconnect-B connecting cable (charge controller/battery) or the cables that come with the Schaudt charger, to connect the charge controller to the battery.

## 3 Commissioning of the system

The initial operation of the SOLARA complete set is part of proper and professional implementation and installation. The system must only be operated following a careful visual examination and a professional electrical inspection. Furthermore, a report of the commissioning must be prepared.

Follow the checklist below during the initial operation of the system:

### Visual examination:

- Safe bondings on the roof
- Cable installation on solar panels, charge controller and batteries

### Electrical inspection:

- String open-circuit voltages

### Please note:

This list is only for your information. It is not intended to be exhaustive.

## 4 Maintenance and cleaning

This SOLARA complete set requires very little maintenance and servicing.

**However, we recommend you inspect the system regularly and perform a check every six months according to the instructions listed below:**

- Check the solar panels for soiling
- Check the panel fastening where accessible
- Check the wiring where accessible (connection cable, fastenings, mechanical damage)
- Check the electrical functions of all components
- Monitor the operational safety of the electrical components



**Warning!  
No high pressure cleaning!**

Rain usually automatically cleans the solar panels. If, however, the panel surface is soiled by leaves, bird droppings, pollen etc., we recommend cleaning with plenty of water without a cleaning agent. The panels are best cleaned using a water hose and soft, gentle cleaning appliance such as a sponge or car wash brush. Under no circumstances should dirt be scratched or

rubbed off without moisture in order to avoid micro-scratches which may affect the yield of the system or could lead to module damage in the long term.

**Please note:**

Do not step onto the solar panels for cleaning purposes

## 5 Warranty and guarantee

Claims under warranty and guarantee may only be pursued if the installation and initial operation of the in-roof PV system can be proven to have been carried out by a qualified specialist.

Such claims are excluded under the following circumstances:

- Unprofessional installation of the complete set
- Improper use or unauthorised modification of delivered components
- Improper use of individual components in a system
- Deviations from the installation guide during installation
- Installation of defective components

For more information on guarantees and warranties, please see the SOLARA GmbH warranty, available at [www.solara.de](http://www.solara.de).

## 6 Disclaimer

SOLARA GmbH cannot monitor compliance with the details and instructions contained in this installation guide. For this reason, SOLARA GmbH cannot assume responsibility or liability for damage arising from improper installation, improper operation or incorrect use of the photovoltaic system and/or individual components thereof.

We explicitly state that failure to observe the specifications contained in the mounting instructions, even for individual components, will result in the exclusion of all guarantees, warranties and liability claims with regard to the complete system.



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