BACK-CONTACT
SOLAR MODULES

Solar Panels of the ECTIVE BSP Series

Installation Instructions

ECTIVE

Table of Contents

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Welcome!

Thank you for choosing an ECTIVE BSP Back-Contact solar module!
Please read this manual carefully before installing and using the device.
Also make sure to read and follow the instructions for any charge controller or any other devices you connect to the solar module.

ECTIVE stands for power supply solutions at an unbeatable price-performance ratio.

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1. General Information About this Manual

1.1 Subject and Purpose of these Instructions

This manual presents all relevant information for the safe installation of ECTIVE BSP solar modules. Expert knowledge is required for the installation and commissioning of photovoltaic systems. Therefore, you should read this manual carefully and take into account all the safety instructions listed here when installing the modules. If you have any questions about the products, simply contact our service team by mail (info@ective.de). Keep the manual in a safe place for future reference, such as maintenance and care of the solar module.

1.2 Validity

Please note that our products are subject to unannounced technical changes at any time and that the associated instructions may change accordingly. The validity of the information in this document is based on the data of your order confirmation for the purchased product. If you have any questions, please contact ECTIVE.

1.3 Warranty

The current warranty conditions of ECTIVE apply to the solar modules. In addition to the legal warranty for production and material defects existing at the time of delivery, we grant a voluntary manufacturer‘s warranty of three years on our products..

1.4 Disclaimer

The use of ECTIVE solar modules is at your own risk. The manufacturer is not liable for typical wear and tear of the products. Likewise, no responsibility is assumed for defects resulting from improper use or lack of maintenance. Liability for damages is excluded in the following cases:

- Device damage due to overvoltage or mechanical influences.
- Faulty assembly/installation
- Damage due to device use for purposes other than those intended by the manufacturer
- Technical/structural modifications to the devices by the manufacturer without written approval

2. Safety Instructions

2.1 Dangers

The installation of the ECTIVE solar modules may only be carried out by competent specialists. The following must be observed:

- The installer himself is liable for injuries or accidents of any kind in the course of installation.
- A single solar module generates DC voltages of 30 volts and more, which can already lead to dangerous electric shocks. If several modules are connected in series, the voltage of the individual modules adds up to a correspondingly higher total voltage.
- Cover the solar module with an opaque material during installation so that no solar current can be generated and thus there is no risk of electric shock.
- Use only insulated tools approved for electrical work during installation.
- When disconnecting the modules from the solar system, do not apply any current. Ensure beforehand that the inverter is disconnected from the power supply on both sides (DC and AC sides).
- Never carry out work on the solar system during rain or strong winds. Use suitable fall protection for work on the roof.
- During transport, installation and maintenance of all components of the photovoltaic system, all safety specifications of the manufacturers must always be observed.

2.2 Damage to Equipment and Property

To avoid damage due to improper use, you should observe the following instructions:

- Only use cables, connections and racks intended for this purpose for your photovoltaic system.
- Only use solar modules of the same type within a photovoltaic system.
- Only use intact solar modules.
- Do not short-circuit the modules.
- Abruptly setting down or dropping the modules, as well as heavy objects lying or falling on them, can lead to damage. Likewise, persons should not walk or stand on the modules.
- During transport and installation, make sure to hold the modules carefully by the frame and not by the electrical connection components.
- Do not drill any additional holes on the frame or on the glass surface.
- Individual components of the module as well as glued-on information signs must not be removed.
- Avoid getting paint or adhesives on the module surface.
- Artificial amplification of the incident sunlight (e.g. by a mirror) must be avoided.
- Avoid direct sunlight on the back of the modules.
- Do not place the modules in locations where flammable gases can escape.
- Unpack the product only in the manner specified by the manufacturer and with suitable tools to avoid damage.
- The manufacturer assumes no responsibility for an improperly set up rack or non-compliance with the locally applicable legal requirements for the installation of photovoltaic systems.

3. Installation of Solar Modules

⚠ Make sure to remove any protective films, covers and corner protections from your solar panel.

3.1 Location

ECTIVE solar modules are designed to be mounted on the ground or on roofs of houses or vehicles. You should also consider the following when choosing a location:

- In southern latitudes, solar modules should face north, while in northern latitudes they should face south.
- Seek professional help from a solar installer or system designer to determine the proper tilt angle of your modules.
- When positioning the modules, make sure that the solar cells are free of shade all day and over their entire surface.
- For upright placement, the connection socket should face upward while the connection cables run downward.

3.2 Rack

Solar modules require a frame made of UV and corrosion resistant material that provides sufficient stability for loads caused by snow and wind. When mounting, consider the following:

- All four anchoring points of the modules must be securely fixed to the frame. For additional stabilization in case of stronger wind or snow load, you should attach further anchors.
- Depending on the frame, mounting is possible using turn screws or module clamps.
- Recommended tightening torque for mounting screws: 6 to 14 Nm.
- Recommended clamping area per module clamp: 600 mm^2 or more.
- When mounting on a car roof, use special plastic profiles.

3.3 Types of Mounting

ECTIVE solar modules are suitable for free-standing, on-roof and in-roof mounting as well as for mounting on poles or masts.

- When mounting, make sure that the ventilation and drainage openings located in the frame remain free.
- The modules should be placed at an installation angle of at least 15° for optimal self-cleaning.
- Maintain a distance of at least 5 mm between the modules.
- The distance between the end clamp and the mounting rail should be 8 to 10 cm.

Important for free-standing installation: Make sure that the modules are not in the shade or shade each other. If installed close to the ground, the lower area must not be covered with snow. Damage caused by flying sand or small stones must also be excluded.

Important for mounting parallel to the roof (e.g. car roof): Ensure sufficient air space (min. 100 mm) between the solar module and the mounting surface. Any holes in the roof required for mounting must be securely sealed at the end.

3.4 ECTIVE Mounting Accessories

With the convenient mounting sets from ECTIVE, solar modules can be mounted securely and ergonomically. This minimizes flow resistance and wind noise while ensuring optimum hold. The mounting elements, which are available in different sets depending on requirements, include corner profiles, short and long retaining spoilers and a roof bushing for cables. The elements are available in plastic (black or white) or aluminum in the ECTIVE store: https://www.ective.de/solar/zubehoer-fuer-solar
The profiles are attached to the solar module frame with screws and then glued, e.g. to the roof of a camper. It is essential that you follow the instructions in the corresponding manual for the mounting elements during installation!

4. Electrical Installation

4.1 General Notes

The currents and voltages produced by the module under normal conditions differ from the values on the data sheet because they were obtained under standard test conditions.

- To determine component voltages, load capacity, fuse size, etc. within your system, you should multiply the specified short-circuit current and open-circuit voltage values by a factor of 1.25.
- Be careful not to exceed the maximum system voltage of the components and the allowable input voltage of the connected inverter or solar charge controller.
- Recommended cable cross-sectional area per module: 4 mm^2.
- Recommended rated current per connection > 10 A.

Important: If you want to feed the produced solar power into your utility grid, you usually need a permit for this from the responsible utility grid operator. The connection of the system to the house power grid may only be carried out by a qualified specialist.

4.2 Grounding

It is imperative that you comply with the locally applicable grounding regulations. Do not use grounding connections such as bolts and screws for module fastening to the rack. The holes provided for this purpose at the rear of the module frame must be used for fastening the equipotential bonding.

4.3 Wiring

Only use suitable plugs of the same type and UV-resistant solar cables for the installation.

- When laying the cables, avoid kinking them or chafing them along sharp objects.
- Ensure that the bending radius of the cables is sufficient (at least 8 times the cable outer diameter) and that there is sufficient distance between the bend and the junction box (at least 5 cm).
- Do not lay cables under tensile stress; a tensile moment of 50 N (5 kg) must not be exceeded.
- Use cables that are as short as possible to reduce inherent loss.

4.4 Testing

Before use, test the electrical components of your system.

- Check the open circuit voltage of each string using a digital multimeter. The values must equal the sum of the nominal voltage specified for each module.
- On each series circuit, check the short-circuit current using a multimeter. The measured value must be 1.25 times the rated short-circuit current of the respective module.

5. Troubleshooting and Maintenance

5.1 Defective Bypass Diodes

Shaded solar cells can cause high reverse currents, causing the affected cells to heat up strongly. To protect the solar modules from damage in such cases, they have bypass diodes. If one of these diodes fails, you must replace it. By stating the serial number of your module, you can request the appropriate diode type from ECTIVE.

5.2 Low Voltage

Excessive low voltage may be caused by faulty terminations or defective bypass diodes.

- Check all cable connections to ensure that they are connected correctly.
- Measure the open circuit voltage at each module.
- Cover all modules with an opaque material.
- Disconnect both terminals on the module under test, remove the cover on that module, and measure the open circuit voltage at the terminals.
- If the voltage is only half the nominal voltage, the bypass diode is defective.
- If the voltage between both terminals deviates by more than 5 %, there is a faulty connection.

5.3 Maintenance

We recommend the following measures for regular maintenance of your ECTIVE Solar modules:

- Remove dirt from the glass surfaces with water and a soft cloth or sponge. Do not use any abrasive cleaning solutions.
- Check all connections every six months to ensure that they are not damaged, dirty or loose.
- Consult a competent professional if any problems occur.

6. Disposal

The EU Directive 2012/19/EU WEEE regulates the disposal of solar modules. According to this, the local recycling center is obligated to accept solar modules and feed them into the recycling process. If you have any questions about this, please do not hesitate to contact us.

Please recycle or dispose of the packaging material for this product.
The german Electronic Equipment Act (ElektroG) regulates how to place electronic devices on the market, how to recycle and dispose of them.

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