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› AeternaSol 400W Bifacial Solar Panel (2x200W) Instruction Manual

AeternaSol D1440T

AeternaSol 400W Bifacial Solar Panel (2x200W) Instruction Manual

Model: D1440T

1. INTRODUCTION

This manual provides essential information for the safe and efficient installation, operation, and maintenance of your AeternaSol 400W Bifacial Solar Panel system (2x200W panels). These N-Type monocrystalline solar panels are designed for high efficiency and durability in various off-grid applications, including RVs, boats, trailers, campers, and residential setups.

The AeternaSol 200W solar panel features N-Type A+ Grade Cells with 18BB Full-Welding Silver-Containing Busbars, achieving up to 25% conversion efficiency. Its bifacial design captures sunlight from both sides, potentially boosting total power output by up to 30% compared to traditional single-sided panels. The panels are built with an IP68-rated junction box and a heavy-duty aluminum alloy frame for all-weather durability and a long service life.

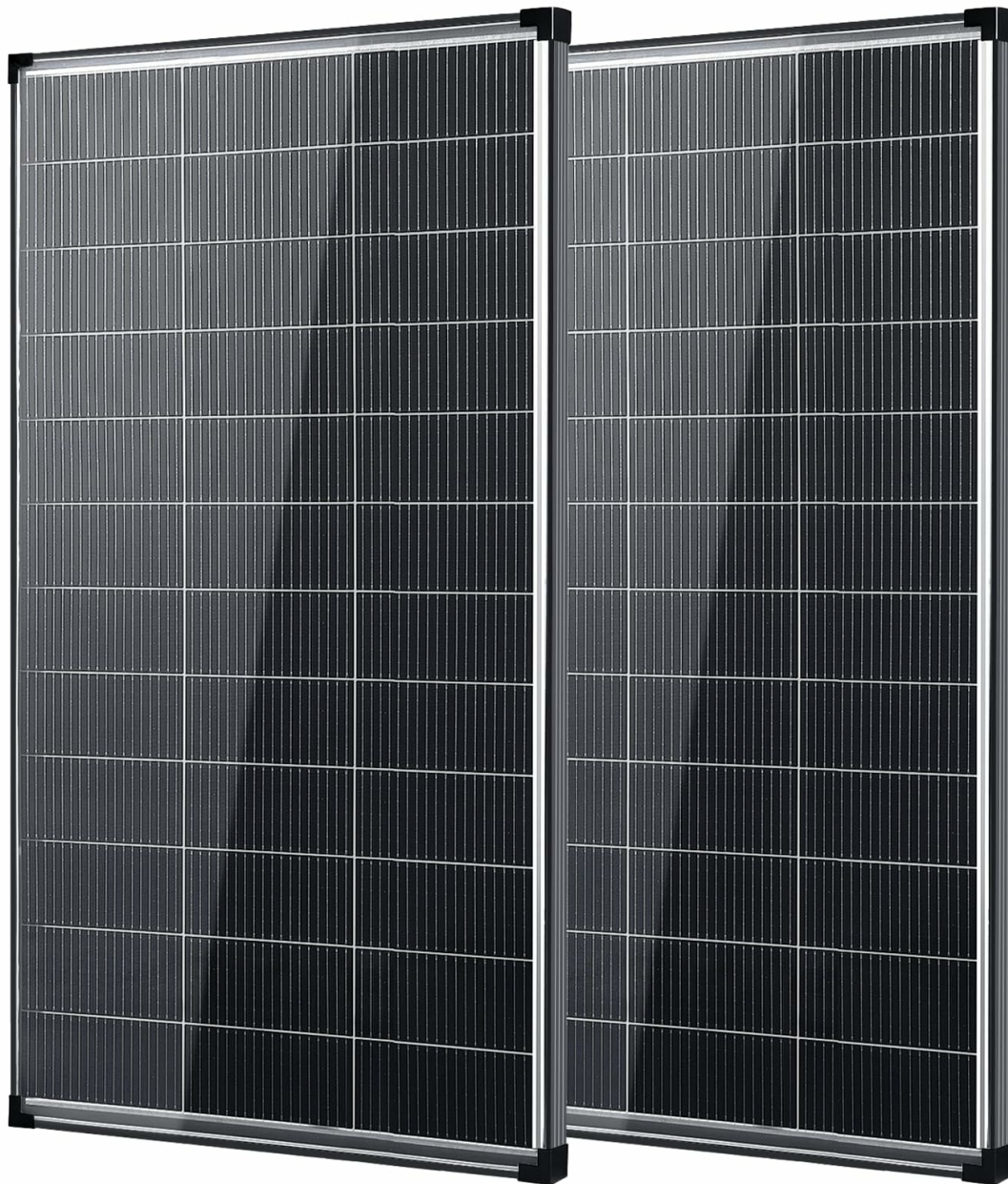


Image 1.1: AeternaSol 200W Bifacial Solar Panel. This image shows the front view of the solar panel, highlighting its sleek design and monocrystalline cells.

2. SAFETY INFORMATION

Read all safety instructions before installation or operation. Failure to follow these instructions may result in electric shock, fire, serious injury, or property damage.

- **Electrical Hazard:** Solar panels generate electricity when exposed to light. Avoid touching live electrical parts. Always cover the panels with an opaque material during installation to prevent electricity generation.
- **Professional Installation:** For complex systems or grid-tied applications, consult a qualified electrician or solar professional.
- **Handling:** Panels are heavy and fragile. Handle with care to avoid dropping or damaging the glass. Wear appropriate personal protective equipment (PPE), including gloves and safety glasses.
- **Tools:** Use insulated tools when working with electrical connections.
- **Environment:** Do not install panels in areas prone to excessive shading, flammable gases, or corrosive substances. Ensure proper ventilation around the panels.
- **Connections:** Ensure all electrical connections are tight and secure to prevent arcing and overheating.

3. PACKAGE CONTENTS

Verify that all components are present and undamaged upon unpacking:

- Two (2) AeternaSol 200W N-Type Bifacial Solar Panels
- Integrated MC4 Connectors and 11 AWG Oxygen-Free Copper Wire

Note: Additional accessories such as mounting brackets, charge controllers, batteries, and inverters are sold separately and are required for a complete solar power system.

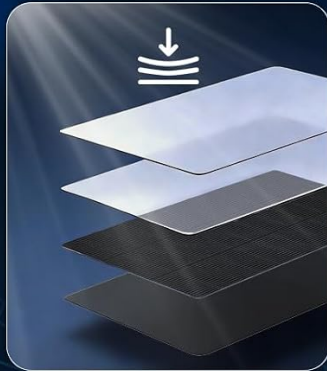
4. SETUP

4.1 Mounting the Solar Panels

The AeternaSol solar panels feature a heavy-duty aluminum alloy frame with pre-drilled holes for effortless installation. This design allows for secure mounting on various surfaces without the need for additional drilling.

- **Location:** Choose a location that receives maximum direct sunlight throughout the day. Consider the angle and orientation for optimal energy harvest. For bifacial panels, ensure the rear side can also receive reflected light from surfaces like grass, sand, or light-colored rooftops.
- **Secure Mounting:** Use appropriate mounting hardware (not included) to securely fasten the panels to your chosen surface (e.g., RV roof, ground mount, building roof). Ensure the mounting structure can support the weight of the panels and withstand local wind and snow loads.
- **Ventilation:** Allow for adequate airflow around and beneath the panels to prevent overheating, which can reduce efficiency.

3.2mm Low-iron Tempered Photovoltaic Glass



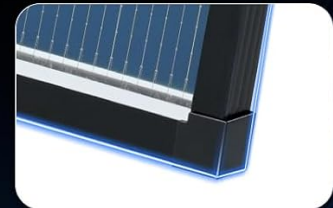
More Light Transmittance



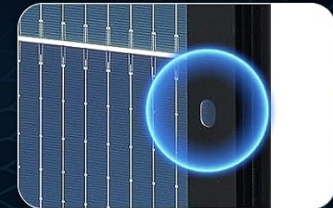
Durable Tempered Glass



1.2mm Anti-Corrosion Aluminum Alloy Frame



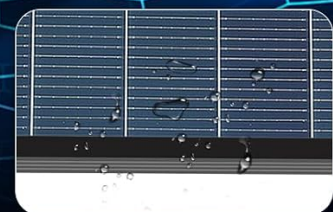
More Robust Aluminum Alloy Frame



Pre-drilled Holes for Easy Installation



Sealant Prevent Air to Corrode Monocrystalline Cell



Resists Rust Over Time

Image 4.1: Solar Panel Frame and Glass Construction. This image illustrates the robust aluminum alloy frame, tempered glass, and pre-drilled holes for easy installation.

1-on-1 Solar Solution

AeternaSol Tech support

AeternaSol tech support could provide the 1-on-1 solarsolution for each customer, including guidance onchoosing solar accessories and how to build your solarsystem.



Image 4.2: Solar Panel Application Scenarios. This image displays various installation environments such as camping, rooftops, farms, RVs, and courtyards.

4.2 Electrical Connections

The panels are equipped with MC4 connectors and 11 AWG oxygen-free copper wire for reliable and efficient power transfer. A reverse current blocking diode is integrated into the junction box to prevent energy drain at night.

- **System Components:** A complete solar power system typically includes solar panels, a charge controller, a battery bank, and an inverter (for AC loads). Ensure all components are compatible with the panel's voltage and current specifications.
- **Wiring:** Connect the solar panels to a compatible charge controller. The charge controller then connects to your battery bank. If you have AC loads, an inverter will connect to the battery bank.
- **Parallel vs. Series:** You can connect multiple panels in parallel to increase current (and total wattage) while maintaining voltage, or in series to increase voltage (and total wattage) while maintaining current. Refer to the diagrams below for guidance. Always ensure proper polarity (+ to + and - to - for parallel; + to - for series).
- **MC4 Connectors:** Ensure MC4 connectors are fully seated and locked to maintain an IP68 waterproof seal.

18BB Silver-Containing Full Welding Busbars

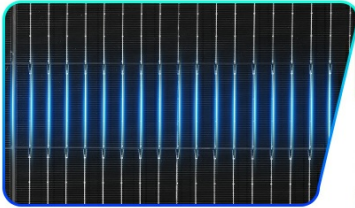
It ensures lower degradation ($\leq 1\%$ in the first year, $\leq 0.4\%$ annually) and an extended service life.

OURS

Full Welding 18BB Solar Cells

- 25% Efficiency long lifespan
- 11% Lower Heat Generation
- 50% Partial Shaded Output

AeternaSol Solar Cells



VS

Others

Partial Welding 12BB Solar Cells

- 22.5% Efficiency short lifespan
- More Heat Generation
- 0% Partial Shaded Output

Ordinary Solar Cells

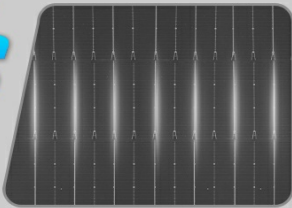


Image 4.3: Solar Panel Wiring Diagrams. This image illustrates how to connect solar panels in parallel and in series to a charge controller, battery, and inverter.

Thicker MC4 Connector & Wire



IP68 Waterproof Shell



Copper Inside

Galvanized Copper Terminal



Thicker Universal MC4 Connector



**Larger 25A
Load Current**



Longer Lifespan



**35% Thicker
Insulation**

**11AWG 100%
Oxygen Free Copper**

**Durable Weather-
Resistant Jacket**

Image 4.4: MC4 Connector and Wire Details. This image highlights the robust MC4 connector, galvanized copper pins, and 11 AWG oxygen-free copper wire for secure and efficient connections.

Reverse Current Blocking Diode Junction Box

No energy drains at night

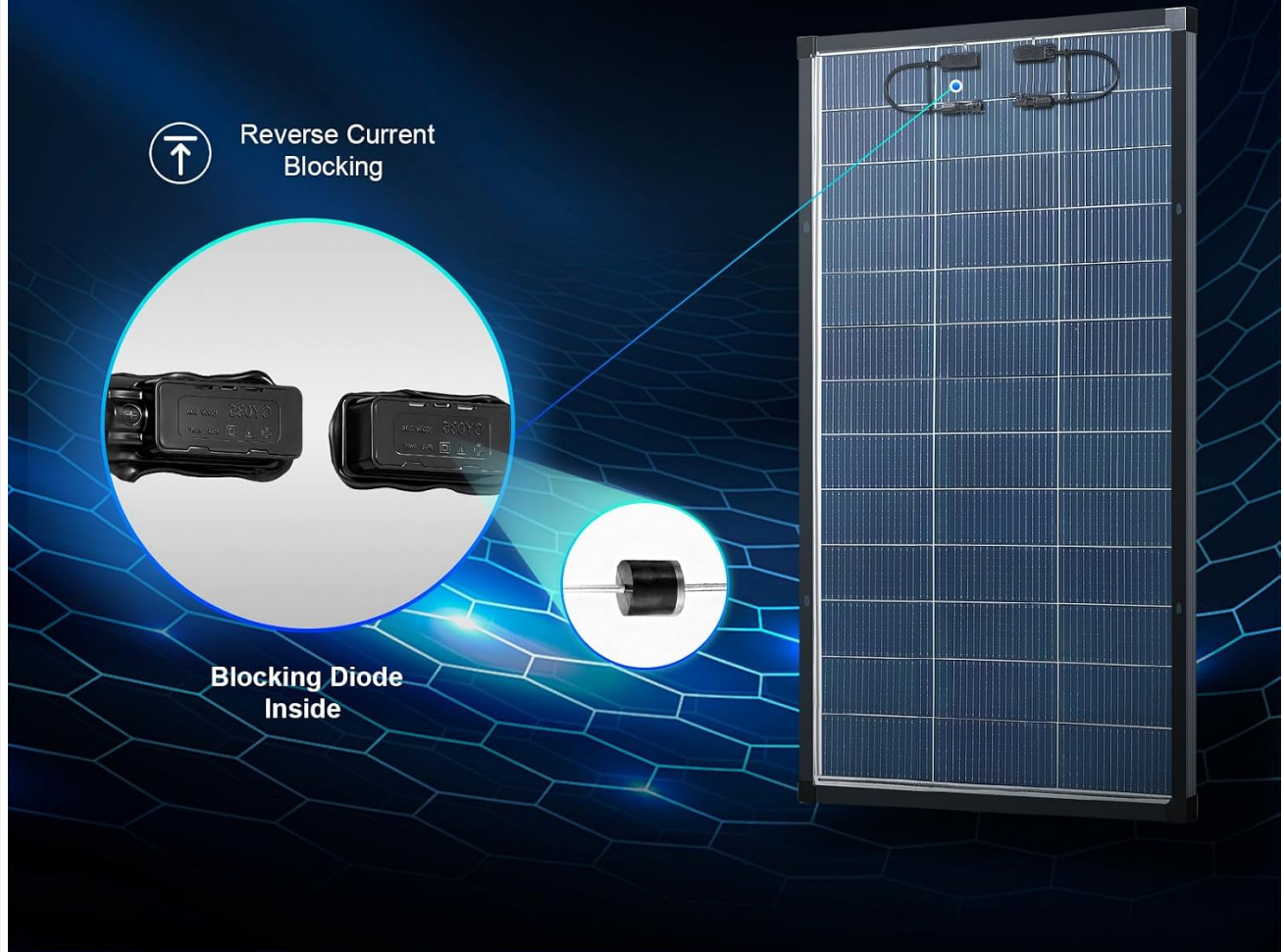


Image 4.5: Reverse Current Blocking Diode. This image shows the integrated diode within the junction box, preventing power loss from the battery to the panel at night.

5. OPERATING INSTRUCTIONS

Once properly installed and connected to a charge controller and battery bank, your AeternaSol solar panels will begin generating electricity when exposed to sunlight.

- **Optimal Performance:** For maximum power output, ensure the panels are positioned to receive direct, unobstructed sunlight. Any shading, even partial, can significantly reduce output.
- **Bifacial Advantage:** The bifacial design allows the panels to capture additional energy from reflected light. Optimize this by installing panels over light-colored surfaces (e.g., white roofs, light-colored ground) or with a reflective backing if possible.
- **Monitoring:** Use your charge controller's display or a separate monitoring system to track power generation, battery charge status, and system health.



Image 5.1: Bifacial Solar Panel Capturing Light. This image demonstrates how the bifacial panel captures both direct and reflected sunlight for increased energy output.

6. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your solar panels.

- **Cleaning:** Periodically clean the surface of the solar panels to remove dust, dirt, leaves, and other debris that can reduce efficiency. Use a soft cloth and mild, non-abrasive cleaning solution with water. Avoid harsh chemicals or abrasive materials.
- **Inspection:** Regularly inspect the panels for any physical damage, such as cracks in the glass, bent frames, or loose connections. Check the wiring and MC4 connectors for signs of wear, corrosion, or damage.
- **Junction Box:** The IP68-rated junction box with potting technology is designed to resist water, steam, and dust ingress, minimizing maintenance needs. However, occasional visual inspection is recommended.
- **Environmental Durability:** The panels are designed to withstand harsh environments, including heavy rain, high humidity, and coastal conditions, thanks to their IP68 rating and salt-corrosion resistance.

Durable IP68



Withstands
5400Pa snow load
2400Pa wind pressure



Salt-corrosion
resistant



Longer Lifespan



No Short Circuit Risk

Image 6.1: IP68 Durability Features. This image highlights the panel's resistance to snow, wind, water, and salt corrosion, ensuring a longer lifespan.

Durable IP68 Potting-Tech Junction Box

The image is a comparison graphic titled 'Durable IP68 Potting-Tech Junction Box'. It features a central 'VS' logo with a lightning bolt. On the left, under the heading 'OURS', is a circular inset showing a person in a blue protective suit performing 'Tin-plated Welding' on a circuit board. Below this, a circular inset shows the 'IP68 Potting Tech' where components are submerged in a potting material. On the right, under the heading 'Others', is a circular inset showing a standard white junction box mounted on a wall. Below the comparison, a table lists five features for 'OURS' and 'Others'.

OURS	Others
No Water short circuit risk 😊	☹️ Water Short circuit risk
30 Years J-Box Rusting proof 😊	☹️ 5 Years Rusting proof
Lower Heat Generation 😊	☹️ Higher Heat Generation
Long Lifespan 😊	☹️ Short Lifespan

Image 6.2: IP68 Potting-Tech Junction Box. This image compares the AeternaSol's advanced potting technology to standard junction boxes, emphasizing superior water blocking and heat dissipation.

7. TROUBLESHOOTING

If you experience issues with your solar panels, consider the following common troubleshooting steps:

- **Low or No Power Output:**

- Check for shading on the panel surface.
- Clean the panel surface if it's dirty.
- Verify all electrical connections are secure and free from corrosion.
- Ensure the charge controller is functioning correctly and is compatible with the panel's specifications.
- Check for any physical damage to the panel.

- **Overheating:** Ensure adequate ventilation around the panels. Excessive heat can reduce efficiency.

- **System Not Charging:** Confirm the battery bank is properly connected and not fully charged. Check the charge controller's error indicators.

If problems persist after performing these checks, contact customer support.

8. SPECIFICATIONS

The following table details the technical specifications for each AeternaSol 200W Bifacial Solar Panel:

Specification	Value
Brand	AeternaSol
Model Number	D1440T
Material	Monocrystalline, Aluminum, Tempered Glass, Tributyl Tin
Product Dimensions (L x W x H)	26.37" x 1.18" x 56.69" (67cm x 3cm x 144cm)
Item Weight	22 pounds (10 kg)
Efficiency	25%
Maximum Power (Pmax)	200 watts
Output Voltage (Vmp)	18 volts
Maximum Voltage (Voc)	26.27 volts
Amperage Capacity (Imp)	7.61 A
Short-Circuit Current (Isc)	9.38 A
IP Rating	IP68
Maximum System Voltage	DC1000V

Compact Size, Huge Power

AeternaSol

Monocrystalline solar module

Solar Panel Technical Parameters	200W
Maximum Power (Pmax)	200W±3%
Operating Voltage (Vmpp)	24.96
Operating Current (Impp)	8.14
Open-Circuit Voltage (Voc)	26.27
Short-Circuit Current (Isc)	9.35

Maximum System Voltage (Vsys max)	DC1000V
IP Rating (IP)	IP68
Dimensions	1440*670*30mm

Warning

Only qualified installers and technicians should install or perform maintenance work on these modules. This unit produces electricity when exposed to light. Follow all applicable electrical safety precautions. Do not disconnect under load. Do not damage or scratch the rear surface of the module.



Solar Panel Technical Parameters	200W	Operating Current (Impp)	8.14	Maximum System Voltage (Vsys max)	DC1000V
Maximum Power (Pmax)	200W±3%	Open-Circuit Voltage (Voc)	26.27	IP Rating (IP)	IP68
Operating Voltage (Vmpp)	24.96	Short-Circuit Current (Isc)	9.35	Dimensions	1440*670*30mm



Image 8.1: Solar Panel Dimensions and Specifications. This image provides a visual representation of the panel's dimensions and a summary of its key electrical parameters.

9. WARRANTY AND SUPPORT

AeternaSol stands behind the quality and performance of its solar panels.

- **Material and Workmanship Warranty:** A 5-year warranty covers defects in materials and workmanship.
- **Performance Guarantee:** A 25-year performance guarantee ensures that the panels will maintain at least 84.5% of their rated power output throughout this period.
- **Seller Support:** Enjoy 10-year seller support for any inquiries or issues you may encounter.

For technical assistance, warranty claims, or any questions regarding your AeternaSol solar panels, please contact our customer support team. Refer to the product packaging or the AeternaSol official website for contact details.