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Hilitand Hilitandc21af4vgq6

Hilitand PV Combiner Box 4 in 2 Out DC 1000V User Manual

Model: Hilitandc21af4vgq6

1. INTRODUCTION

This manual provides essential information for the safe and effective installation, operation, and maintenance of the Hilitand PV Combiner Box. This device is designed to combine multiple strings of solar panels into a single output, providing protection and isolation for photovoltaic systems. Please read this manual thoroughly before installation and retain it for future reference.

2. SAFETY INFORMATION

Warning: Installation and maintenance of this PV combiner box involve high DC voltages and currents, which can be hazardous. Only qualified personnel with knowledge of electrical systems and safety procedures should perform installation or service.

- Always disconnect all power sources before working on the combiner box.
- Ensure proper grounding of the combiner box as per local electrical codes.
- Use appropriate personal protective equipment (PPE), including insulated gloves and safety glasses.
- Verify correct polarity of all DC connections to prevent damage to equipment.
- Do not open the enclosure or attempt repairs if you are not qualified.
- Ensure the combiner box is securely mounted in a location protected from direct sunlight and extreme weather conditions, although it is rated IP65.

3. PRODUCT OVERVIEW

The Hilitand PV Combiner Box is designed for both on-grid and off-grid solar panel systems. It features a robust, rain-proof, pressure-resistant, and flame-retardant casing suitable for outdoor use. The unit includes pre-wired components for simplified installation.

3.1 Key Features

- **Input/Output Configuration:** 4 input strings, 2 output strings.
- **High Voltage Protection:** System maximum DC voltage of 1000V.
- **Overcurrent Protection:** 15A fuses for each input string and a 63A circuit breaker for overall output.
- **Surge Protection:** High voltage arrester (LD-40) provides lightning protection.
- **Pre-wired Design:** Internal wiring is pre-installed with professional wires, suitable for solar systems.
- **Enclosure:** IP65 rated plastic box, wall-mountable.
- **DC Isolation Switch:** For output conversion.

3.2 Components

The combiner box includes:

- DC Fuses (15A)
- Surge Protective Devices (SPDs) / Lightning Arresters (LD-40)
- DC Circuit Breaker (63A)
- DC Isolation Switch
- Waterproof Connectors for inputs and outputs
- Grounding wire connector



Figure 1: Hilitand PV Combiner Box with its internal components visible, including fuses, surge protectors, and circuit breakers.

PV Combiner Box

Suitable for on/off grid solar power generation systems

*Sturdy Shell
Rain proof, pressure resistant, flame retardant*

*High Voltage Lightning Arrester
Provide lightning protection*

*15A Fuse
Good current limiting performance and strong breaking ability*



Figure 2: Overview of PV Combiner Box features, including sturdy shell, high voltage lightning arrester, and 15A fuse.



PV Combiner Box

*63A Circuit Breaker
With overvoltage and overcurrent protection,
it can cut off and connect load circuits,
providing short circuit fault protection*

*Simple Wiring
Suitable for any traditional surface and
compatible with any brand of solar panels*



Figure 3: Close-up view of the 63A circuit breaker, which provides overvoltage and overcurrent protection.

4. SPECIFICATIONS

Parameter	Value
Item Type	PV Combiner Box
Material	PC, ABS
System Maximum DC Voltage	1000V
Maximum Input Current Per Group	15A
Maximum Input String	4
Maximum Output Conversion Current	32A
Output String	2
Inverter Maximum Power Point Tracking (MPPT)	2
Nominal Discharge Current (SPD)	20kA
Maximum Discharge Current (SPD)	40kA
Voltage Grade (SPD)	3.6kV
Maximum Continuous Working Voltage (SPD)	1000V
Number of Poles (Circuit Breaker)	3 Poles
Structural Feature	Push in Module
Waterproof Rating	IP65
Installation Mode	Wall Mounted
Output Conversion	DC Isolation Switch
Item Weight	8.66 pounds
Package Dimensions	16.06 x 11.5 x 7.4 inches

5. SETUP AND INSTALLATION

The Hilitand PV Combiner Box is designed for direct installation and use. All internal wiring is pre-configured. Follow these steps for proper installation:

5.1 Mounting the Combiner Box

1. Select a suitable wall-mounted location that is easily accessible for maintenance and protected from severe environmental conditions, while allowing for proper cable routing.
2. Use the provided long screws and anchors to securely mount the combiner box to the wall. Ensure the mounting surface is sturdy enough to support the weight of the box and connected cables.

5.2 Wiring Connections

The combiner box features 4 input strings and 2 output strings. The wiring uses standard red for positive (DC+) and black for negative (DC-) cables. Terminals and wiring blocks are designed for safety and simplicity.



Figure 4: Bottom view of the combiner box, illustrating the 'IN 1' to 'IN 4' input ports and 'OUT 1' and 'OUT 2' output ports for DC+ and DC- connections.

*Standard Wiring
Neat and simple*

*Standard red positive cable and black negative cable
The wiring of the combiner box adopts terminals and wiring blocks, which are safe,
clear, and simple*



Figure 5: Internal wiring of the combiner box, demonstrating the standard red positive and black negative cable connections to the components.



4 in and 2 out

Figure 6: Detailed view of the internal wiring, showing connections to the fuses, surge protective devices (LD-40), and circuit breakers.



Figure 7: Close-up of the LD-40 surge protective devices, indicating their specifications for DC 1000V, 20kA nominal discharge current, and 40kA maximum discharge current.

WIRING DIAGRAM

TO GIVE YOU A BETTER UNDERSTANDING OF THE PRODUCT

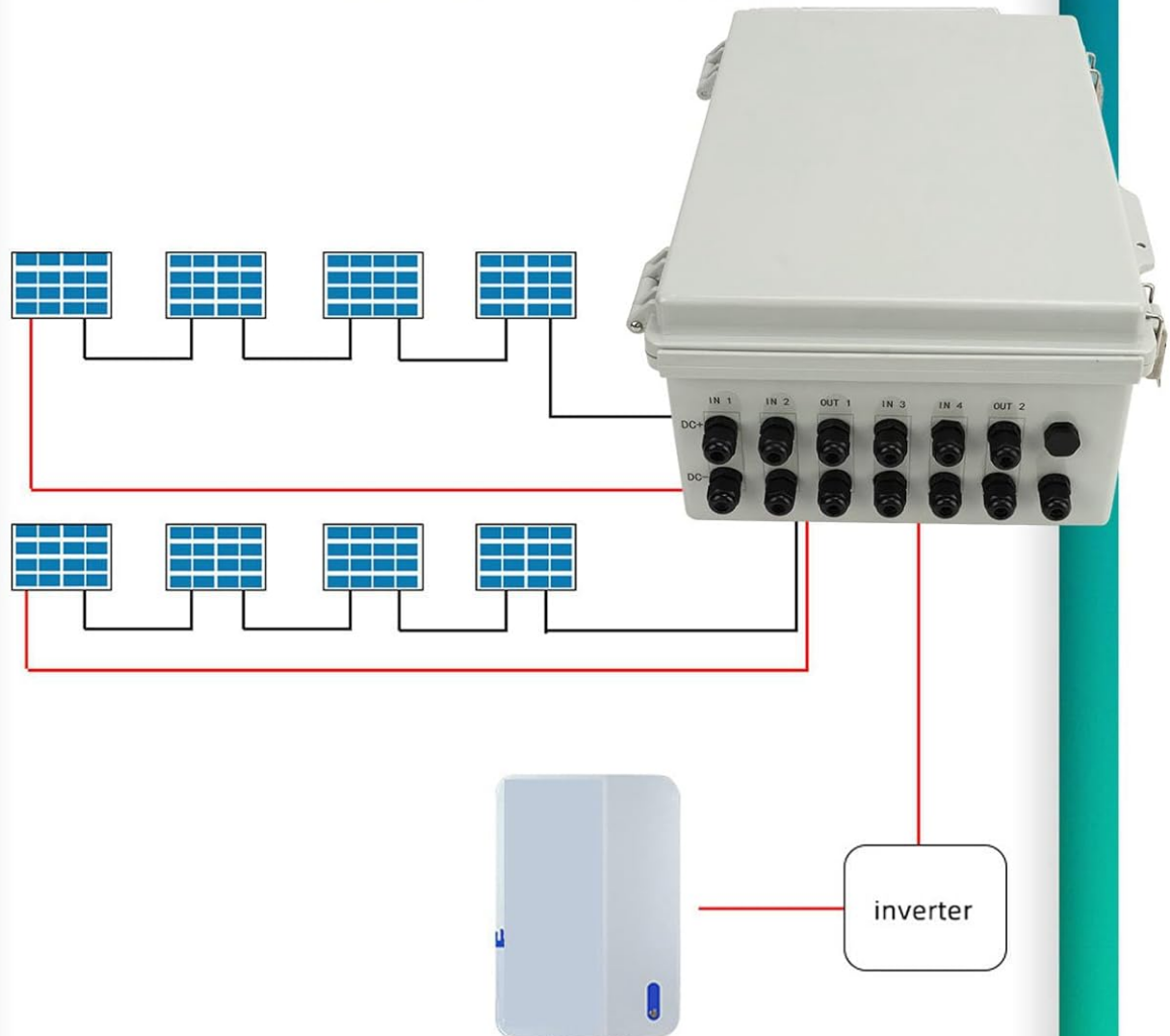


Figure 8: Wiring diagram illustrating the connection of multiple solar panel arrays to the combiner box, which then connects to an inverter.

- 3. Connect Solar Panel Strings:** Connect the positive (DC+) and negative (DC-) cables from each solar panel string to the corresponding 'IN 1' to 'IN 4' ports on the combiner box. Ensure correct polarity for each connection.
- 4. Connect to Inverter:** Connect the positive (DC+) and negative (DC-) output cables from the 'OUT 1' and 'OUT 2' ports of the combiner box to the DC input terminals of your solar inverter.
- 5. Grounding:** Connect a suitable grounding wire from the grounding terminal inside the combiner box to a reliable earth ground. This is crucial for lightning and surge protection.
- 6. Verify Connections:** Double-check all connections for tightness and correct polarity before proceeding.

6. OPERATING INSTRUCTIONS

Once installed and wired correctly, the PV Combiner Box operates passively to combine and protect your solar panel strings. Its primary function is to provide a centralized point for string connection, overcurrent protection, and surge protection.

1. **Initial Power-Up:** After all connections are secure and verified, ensure the DC isolation switch and circuit breaker inside the combiner box are in the 'OFF' position.
2. **Activate System:** Close the lid of the combiner box. Then, switch the DC isolation switch to the 'ON' position, followed by the 63A circuit breaker.
3. **Monitor System:** Observe your inverter's status indicators to confirm proper power generation. The combiner box itself does not have indicators, but its protective devices (fuses, SPDs, circuit breaker) will activate if a fault occurs.

7. MAINTENANCE

Regular maintenance helps ensure the longevity and reliable operation of your PV Combiner Box.

- **Visual Inspection (Quarterly):** Check the exterior of the box for any signs of damage, cracks, or loose mounting. Ensure all cable glands are tight and free from moisture ingress.
- **Internal Inspection (Annually, by qualified personnel):** With all power disconnected, open the box and inspect internal wiring for signs of corrosion, loose connections, or overheating. Check the status indicators on the surge protective devices (SPDs); if an indicator shows red or otherwise indicates failure, the SPD module should be replaced.
- **Cleaning:** Keep the exterior of the box clean from dust and debris. Use a damp cloth; do not use harsh chemicals.
- **Fuse Replacement:** If a string is not producing power, a fuse may have blown. Only replace fuses with those of the exact same rating (15A, 1000V DC).

8. TROUBLESHOOTING

This section addresses common issues you might encounter with the PV Combiner Box.

Problem	Possible Cause	Solution
No power output from combiner box	DC isolation switch or circuit breaker is OFF. Blown fuse in one or more strings. Faulty wiring connection.	Ensure switch and breaker are ON. Check and replace blown fuses (see Maintenance). Verify all wiring connections.
Reduced power output	One or more string fuses blown. Damaged solar panel string.	Inspect and replace blown fuses. Check individual solar panel strings for faults.
Circuit breaker trips frequently	Overcurrent or short circuit in the system.	Identify and rectify the cause of overcurrent or short circuit in the solar array or inverter connection. Do not repeatedly reset the breaker without investigating the fault.
SPD indicator shows fault	Surge protective device has activated due to a voltage surge (e.g., lightning).	Replace the faulty SPD module immediately to restore surge protection.
Water inside the enclosure	Loose cable glands or damaged seal.	Immediately disconnect power. Inspect and tighten all cable glands. Check the enclosure seal for damage and replace if necessary.

9. PACKING LIST

The following items are included with your Hilitand PV Combiner Box:

- 1 x PV Combiner Box
- 4 x Gasket
- 4 x Long Screw
- 4 x Short Screw
- 4 x Anchor

10. WARRANTY AND SUPPORT

For warranty information or technical support, please contact Hilitand customer service through your purchase platform or visit the official Hilitand store. Please have your model number (Hilitandc21af4vgq6) and purchase details ready when contacting support.

Hilitand is committed to providing quality products and customer satisfaction. For more information about Hilitand products, you may visit their store: [Hilitand Store on Amazon](#).