

How to wire the photovoltaic main control module



AI Overview

Wiring a photovoltaic main control module involves connecting solar panels to a charge controller, then to a battery bank, and finally to an inverter, ensuring correct polarity, proper series/parallel configuration, and safety protections.

Step 1: Plan Your System Before wiring, determine the number of solar panels, their voltage and current ratings, and the desired system voltage. Decide whether to wire panels in series (increases voltage) or parallel (increases current), or a combination of both (series-parallel) to match the charge controller and inverter specifications (). Ensure the total voltage does not exceed the maximum allowed by the charge controller or inverter.

Step 2: Connect Solar Panels

- Series Wiring:** Connect the positive terminal of one panel to the negative terminal of the next. This increases the total voltage while keeping current constant ().
- Parallel Wiring:** Connect all positive terminals together and all negative terminals together. This keeps voltage constant while increasing current ().
- Series-Parallel Wiring:** Combine series strings in parallel to achieve the desired voltage and current ().

Step 3: Connect to the Charge Controller Connect the positive and negative leads from the solar array to the corresponding input terminals of the charge controller (). Ensure correct polarity to prevent damage. Use appropriately sized cables based on current and distance to minimize voltage drop ().

Step 4: Connect the Battery Bank Connect the charge controller output terminals to the battery bank, observing correct polarity. Include fuses or circuit breakers between the controller and batteries for overcurrent protection ().

Step 5: Connect the Inverter Connect the battery bank to the inverter to convert DC to AC power. Ensure the inverter is rated for the system voltage and power requirements. Include MCBs (Mini Circuit Breakers) or disconnects to protect the inverter and downstream AC cir...

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