

SolarTech Power Solutions

Off-grid inverter closed loop



Overview

Can CLO-SED-loop control a single-phase off-grid inverter?

This paper proposes a control strategy for single-phase off-grid inverter, which integrates the three closed-loop control with the iterative-based RMS algorithm. The inverter circuit is modeled, and simulation experiment and prototype verification are performed on Matlab.

How does iterative control work in a single-phase off-grid inverter?

Meanwhile, the application of iterative method enhances the dynamic response performance of the system substantially; and improves the real-time timeliness of three closed-loop control. The two complement each other to provide a highly effective, reliable control solution for the single-phase off-grid inverter.

What is a closed-loop control inverter?

Closed-loop control inverters are gaining ever-wider application in various power scenarios such as medical, industrial and military. The requirements for the steady-state and dynamic performances of their output voltage waveforms are becoming increasingly demanding under various load conditions.

What is a common control method for off-grid inverters?

A common control method for off-grid inverters is multiple-loop control with a PI compensator. The output of the voltage loop is the reference value for the current loop. In this model, the common control method is utilized except that the voltage reference and sampling signal is the RMS value of output voltage.

Can a single-phase off-grid inverter solve a voltage drop problem?

Thus, the single-phase off-grid inverter adopting the three closed-loop control strategy can address the voltage drop problem caused by abrupt load variation [6,12].

How a three phase off-grid inverter is driven?

Three phase off-grid inverter is driven using Sine PWM. The sine references are generated using a Harmonic oscillator. The closed loop control is implemented in synchronous reference frame, by converting three phase quantities in d-q synchronous reference frame.

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