

# Voltage hysteresis control inverter





## Overview

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What is hysteresis current control?

Hysteresis current control is a method for controlling a voltage source inverter to force the grid injected current to follow a reference current. It is a controller with non-linear controller loop with hysteresis comparators; an adaptive band of the controller has to be designed in order to obtain fixed switching frequency.

What is hysteresis control for three-level inverter?

Principle schematic of hysteresis control for three-level inverter. (dir / dt: the current rising slope; dif / dt: the current falling slope) The current path that flows from dc-side to ac-side is defined as a positive path ( $i_o > 0$ ), and reversely the negative path ( $i_o < 0$ ).

What are the disadvantages of hysteresis current control?

However, the large fluctuation range of switching frequency is a serious disadvantage of hysteresis current control. Especially, the switching frequency decreases significantly during grid voltage zero-crossing. This frequency fluctuation will cause low-frequency harmonics.

Why is grid current not used in hysteresis control?

Since the filters have a delay effect on the inverter output current with all the ripples removed, the grid current (after the filters) cannot reflect the real value of the inverter output current so it cannot be used in hysteresis control. Therefore, the inverter output current before the filter is taken as the control target.



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### [An improved hysteresis current control scheme during grid voltage ...](#)

Jun 22, 2021 · The significant switching frequency fluctuation around grid voltage (vg) zero-crossing is shown in Figure 1 (iref is the reference current, and fs is the switching frequency). ...

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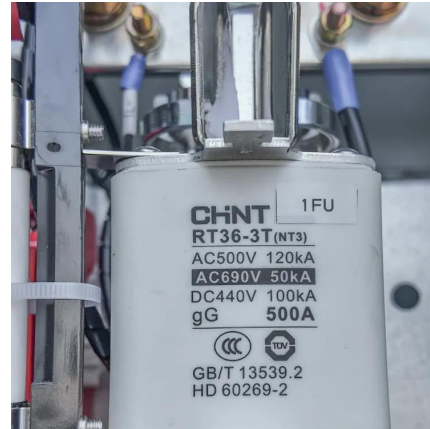


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May 23, 2025 · Figure 3 illustrates the detailed diagram of adaptive HCC control blocks. The grid current is sampled at regular intervals and fed into the controller. The voltage at the point of ...

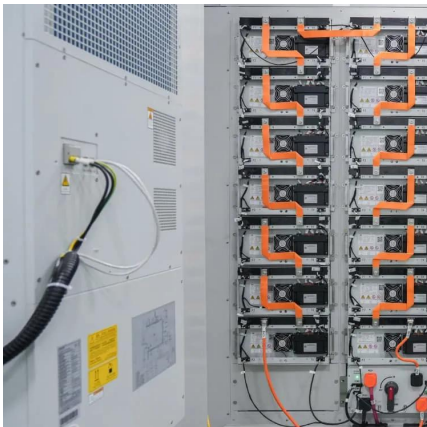
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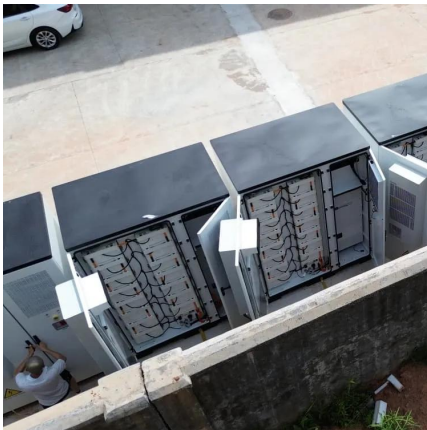
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## **Hysteresis Control**

Hysteresis control is a technique which can be used to control a voltage source inverter where the reference current and the grid current are compared on an instantaneous basis to produce ...



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### [Adaptive Hysteresis Band Current Control for ...](#)

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