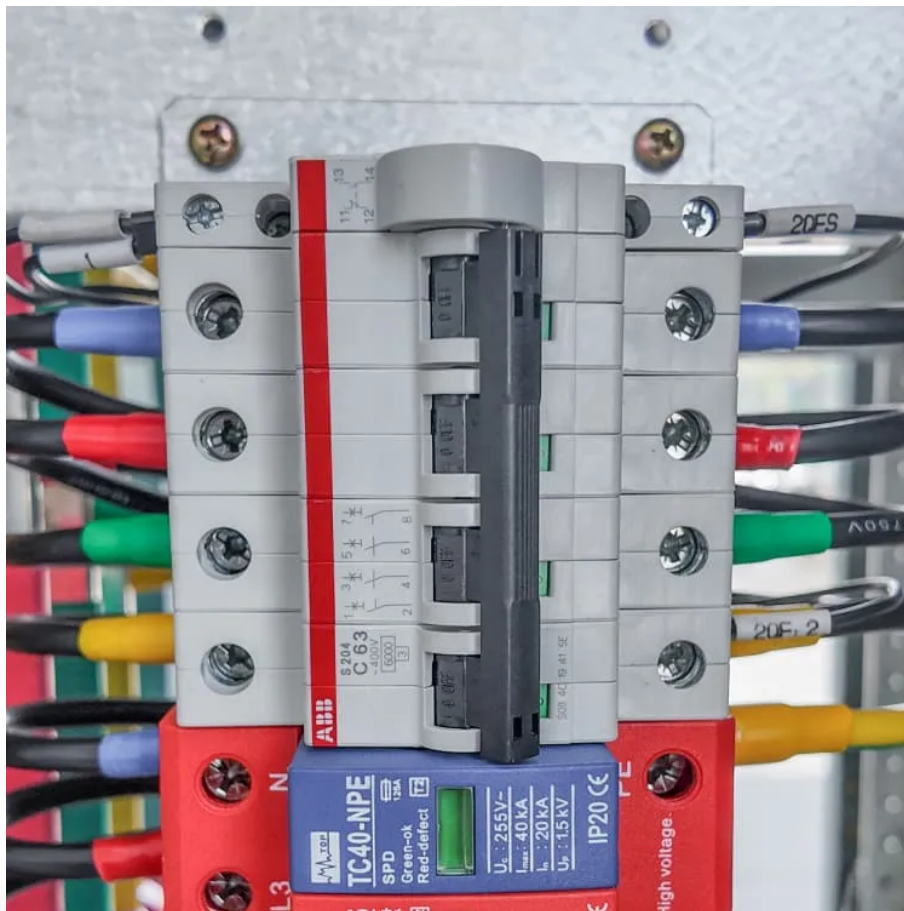


# Inverter sine wave circulating current control





## Overview

---

What are circulating current reduction methods for modular inverters?

The reduction methods for modular inverters are compared in terms of efficiency, performance, and reliability. The possible approaches for circulating current reduction are categorized into three groups—hardware, control, and modulation. Each reduction method is discussed according to the category.

Why do modular inverters have a closed circuit?

Modular inverters have a closed circuit when each inverter shares the common DC source and AC bus. The circulating current is generated by differences in each inverter, such as hardware parameters and control process. The circulating current deteriorates the output current quality and degrades the reliability of the parallel system [12–15].

How circulating current flows between inverters?

The circulating current flows between the inverters when the reference voltages differ according to the dead time, imperfect symmetry in hardware, and dependent control of parallel inverters. Different zero-sequence voltages  $V_{zsv1}$  and  $V_{zsv2}$  are injected into each module based on the discrepancy of the reference voltages from Eq. (10).

How circulating current is generated in a parallel inverter?

The circulating current is generated when the parallel inverters operate with an interleaving scheme to improve the quality of the output current. The isolated transformers to the ac sides can mitigate the circulating current by eliminating the closed current path.



## Inverter sine wave circulating current control

---



### [Review of Methods for Reducing Circulating Currents in ...](#)

Feb 27, 2023 · This study analyzes the circulating current according to its causes and reviews the reduction methods. The reduction methods for modular inverters are compared in terms of ...

### [Enhancing Inverter Performance with Sine Wave Filters: A ...](#)

Sep 7, 2025 · For businesses and professionals seeking high-quality sine wave filters, Janson Controls Technologies (Shenzhen) Co., Ltd. offers reliable solutions tailored to various inverter ...



### **Control strategy for suppression of circulating current using ...**

Aug 20, 2019 · In this study, a circulating current suppression strategy is proposed using high-frequency voltage compensation when asynchronous carriers exist between modules in ...

### [Inverters and harmonics \(case studies of non-linear loads\)](#)

Jul 2, 2022 · It is apparent that the current is highly distorted compared with a perfect sine wave and, in addition, slightly out of phase with respect to the source voltage.



### **Improving efficiency of parallel inverters operation in island ...**

Nov 25, 2023 · This proposal introduces an analytical optimization technique designed to enhance the efficiency of paralleled inverters in microgrid systems while minimizing circulating current.



### Harmonic Analysis and Application of PWM Techniques ...

Oct 18, 2016 · the practical inverters are non sinusoidal and contains different harmonics. Square wave or quasi-square-wave voltages are acceptable only for low and medium power ...



### Circulating Current Control with Loss Reduction for Parallel...

Mar 20, 2025 · Connecting inverters in parallel is a common method for increasing current capacity. Due to the difference in the delay time and on-voltage of the gate circuit and the ...





### [Elimination of zero sequence circulating currents in ...](#)

Oct 23, 2018 · The configuration of modular paralleled three-level T-type inverters (3LT2Is) has been widely utilised to extend the system power rating. However, zero sequence circulating ...

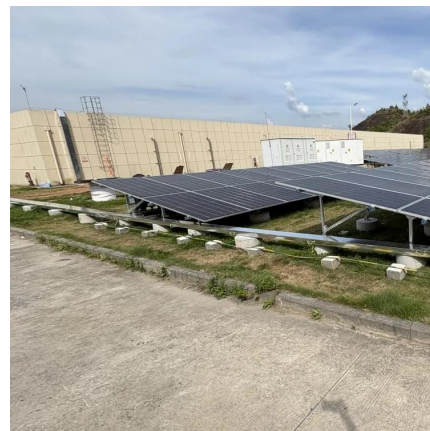


### [800VA Pure Sine Wave Inverter's Reference Design](#)

Apr 1, 2023 · The pure Sine Wave inverter has various applications because of its key advantages such as operation with very low harmonic distortion and clean power like utility-supplied ...

### [Elimination of circulating current in parallel operation of ...](#)

Apr 1, 2022 · This paper presents the control strategy for parallel operation of an inverter to eliminate DC & AC circulating current. This paper also analyses the cross-current between ...



### [A Control Scheme to Suppress Circulating Currents in ...](#)

Nov 13, 2022 · The parallel operation of inverters has many benefits, such as modularity and redundancy. However, the parallel connection of inverters produces circulating currents that ...



## Research on current sharing control of parallel inverters used ...

Sep 13, 2024 · However, parallel inverters can also bring about circulating current issues, especially when using carrier phase shifted sinusoidal PWM (CPS-SPWM) control mode, ...



## Contact Us

---

For catalog requests, pricing, or partnerships, please visit:  
<https://www.woodgoods.pl>

## Scan QR Code for More Information



<https://www.woodgoods.pl>