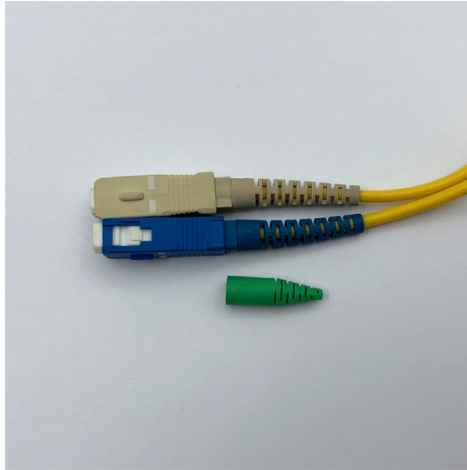


Low-voltage busbar adopts reverse voltage regulation



Article Overview

Reverse voltage on low-voltage busbars can be effectively managed using ORing controllers, hot-swap circuits, and proper busbar design in compliance with IEC 61439 standards.

Key Concepts

Reverse voltage occurs when the polarity of the applied voltage is opposite to the intended direction, potentially causing damage to busbar-connected devices or control electronics. In low-voltage DC systems, such as servo drives or distribution busbars, reverse voltage can result from miswiring, backfeeding from loads, or fault conditions. Busbar standards like IEC 61439 define the design, thermal limits, and protection requirements for low-voltage busbars up to 1000 V AC or 1500 V DC, ensuring safe operation under normal and fault conditions. Compliance with these standards ensures that busbars can handle rated currents, thermal stress, and environmental factors while maintaining electrical integrity.

Protection Methods

- ORing Controllers Devices such as the LM5050-1 provide reverse polarity and reverse current protection by controlling MOSFETs or diodes in series with the busbar. This prevents current from flowing backward into the power source, protecting sensitive electronics like MCUs, gate drivers, and encoders.



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Bus Protection Theory

Busbar Protection Techniques The choice of protection technique used for a specific busbar depends on the protection requirements

Lecture 8: Voltage Regulation

Voltage regulation In distribution systems, voltage control is more challenging Voltage drops due to both active and reactive

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Rated impulse withstand voltage, referred to as Uimp, is the peak value of an impulse voltage of prescribed form and polarity that the

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