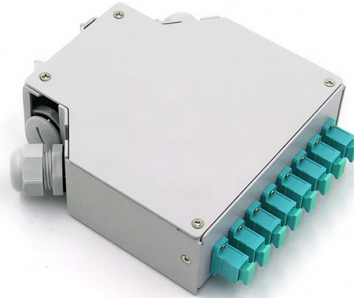


Correct busbar wiring distance



Overview

Busbar Clearance as per IEC 61439: Minimum Distance Chart Busbar clearance as per IEC 61439 — minimum phase-to-phase and phase-to-ground distances by curren.

Key Takeaways

Busbar wiring distances are determined by clearance and creepage requirements, typically guided by IEC 60664-1 and IEC 61439-1 standards, with minimum phase-to-phase and phase-to-ground clearances of 20mm for bare copper in low-voltage systems. Key Concepts

Clearance is the shortest distance through air between conductive parts, designed to prevent flashover during overvoltage events. Creepage distance is the shortest path along an insulating surface between conductive parts, preventing surface tracking, carbonization, and leakage under contamination or humidity. Both must be considered independently, as passing one does not guarantee the other.

Recommended Distances

- Low-voltage busbars (phase-to-phase or phase-to-ground): Minimum clearance for bare copper busbars is $\geq 20\text{mm}$. Insulated busbars can have reduced clearance if insulation meets IEC 60664 or UL 746C dielectric strength requirements.
- Creepage distances: Depend on working voltage, pollution degree, and insulation material group. Higher pollution or humidity requires longer creepage paths or additional insulation coatings such as PVC dipping or epoxy encapsulation.
- Support spacing: Busbars should be mechanically supported at intervals of 300–500mm to withstand short-circuit forces and maintain stability.

- High-current applications (>2000A): Reinforced supports and compliance with IEC/TR 61641 for internal arc fault testing are recommended .
Environmental and Design Considerations
- Pollution degree: Higher pollution levels require increased creepage distances or additional insulation barriers .
- Altitude: At elevations above 2000 meters, air pressure drops, reducing dielectric strength; clearance values should be increased accordingly .
- Busbar arrangement: Parallel busbars with uniform spacing minimize electromagnetic interference (EMI) and skin effect losses, ensuring balanced current distribution .
Practical Tips
- Always check IEC 60664-1 for creepage distances and IEC 61439-1 for low-voltage switchgear clearances.
- Apply a safety margin above the minimum IEC values, especially in dusty, humid, or high-altitude environments .
- Consider insulation type and material group (CTI classification) when determining creepage distances; higher CTI materials allow shorter creepage paths . By following these guidelines, busbar installations can achieve electrical safety, operational reliability, and compliance with international standards.

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Minimum Spacing Between Busbars | Information by Electrical ...

I'm being asked to verify minimum spacing between the busbars, as there is a concern by connecting our lugs

Taking the mystery out of grounding and bonding

Mounting hardware is included, but anchor bolts may be required. Estimate distance from each busbar to its

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