

Grounding wire standard for computer room power distribution box



Overview

Grounding System Installation Standards for Distribution Boxes and. Whether you're a seasoned pro or just starting out, this comprehensive guide will give you the information you need to ensure your system is properly grounded.

Key Takeaways

Proper grounding of a computer room distribution box requires correctly sized copper conductors, secure connections to bonding networks, and resistance below 0.1-25 ohms depending on system standards. Wire Sizing and Connection

For grounding a distribution box in a computer room, the wire size depends on the market and application. In the US, a 10 AWG (5.26 mm²) wire is typically used, while in other regions a 6 mm² wire is standard. The grounding wire should connect from a threaded stud at the bottom of the distribution box to the mounting plate, and then from the mounting plate to the central factory grounding point. For connections to spindles or other equipment, larger wires such as 16 mm² (or 6 AWG in the US) may be required to maintain low resistance.

Resistance Requirements

The total ground resistance between all system components should be less than 0.1 ohm to ensure safety and proper operation. In general grounding practices, a maximum of 25 ohms is recommended for distribution boxes, with testing required for each installation. Low resistance ensures that fault currents are safely dissipated and voltage differences are minimized, protecting both personnel and equipment.

Bonding and Grounding Networks

Computer rooms often use a Mesh-Bonding Network (MBN) or Star-Isolated Bonded Network (Star-IBN) to maintain uniform electrical potential across the facility . Key components include:

- Primary Bonding Bar (PBB): Central connection point for the building grounding electrode system.
- Telecommunications Bonding Backbone (TBB): Interconnects secondary bonding bars (SBB) to the PBB to equalize potential differences.
- Supplementary Bonding Network (SBG): Copper grid under raised floors or along pathways, with spacing between 600 mm and 1.2 m, welded at intersections for low-resistance connections . All racks, cabinets, and enclosures should be individually bonded to the MBN or SBG using 6 AWG conductors to ensure a strong, low-resistance connection .

Material and Installation Considerations

- Use copper conductors for all buried or exposed grounding runs; avoid aluminum due to corrosion risks .
- Ensure all connections are mechanically secure and corrosion-resistant.
- Test each installation to verify resistance and continuity.
- Partner with certified suppliers to ensure material quality and compliance with standards .

Safety and Standards Compliance

Grounding protects personnel from electric shock, stabilizes voltages during transient events, and ensures proper operation of sensitive equipment . Compliance with standards such as TIA-607D, IEC 30129, and local electrical codes is essential for both safety and operational reliability . Properly implemented grounding also mitigates risks from surges, lightning, and fault currents, acting as a “silent guardian” for the computer room infrastructure .

Article Content

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33 kV and 13.8 kV Systems These are 3-wire primary systems with the metal screen /armor of MV cables is grounded at all cable

Grounding & Bonding in the Data Center

And, on top of all that, each telecom grounding and bonding conductor has to be labeled. TIA-942 for Data Center Cabling states that

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