

Grounding of the fiber optic terminal box in the computer room



Overview

What we do is ground the fiber metallic shield, the metallic stress member, or the locate wire on one end.

Key Takeaways

Fiber optic terminal boxes in computer rooms must be properly bonded to the telecommunications grounding busbar (TGB) to ensure safety, equipment protection, and compliance with industry standards.

Even though most fiber optic cables are non-conductive, any metallic components of the terminal box, racks, or patch panels must be grounded to prevent electrical hazards and reduce electromagnetic interference (EMI) in the computer room . Grounding serves two main purposes:

- Protective Earthing: Diverts fault currents from metallic parts to protect personnel and prevent equipment damage .
- Functional Earthing: Dissipates high-frequency noise currents to maintain EMC performance of the cabling system .

Grounding Components and Connections

- Telecommunications Grounding Busbar (TGB): Each computer room should have a TGB made of copper (minimum 2 inches wide by ¼ inch thick) connected to the main building ground or the Telecommunications Main Grounding Busbar (TMGB), .

- **Bonding the Terminal Box:** Metallic fiber optic terminal boxes should be bonded to the TGB using a low-impedance copper conductor. A #6 AWG or larger copper wire is typically recommended, depending on the building's grounding design .
- **Bonding Methods:**
 - Compression lugs or HTAP connectors can be used to attach the bonding conductor to the terminal box.
 - Auxiliary cable brackets or split bolts may be used to bond metallic racks or ladder sections if continuity is not inherent .
 - Ensure all metallic raceways, cable trays, and patch panels are electrically continuous and bonded to the TGB .
 - **Telecommunications Bonding Backbone (TBB):** The TGB in each room should be connected back to the TMGB via the TBB, forming a continuous grounding path throughout the building .
 - **Inspection and Testing:** After installation, verify the continuity and resistance of the bonding connections. AC RMS currents on bonded conductors should typically be between 0.0 A and 1.0 A under normal conditions .
- **Best Practices**
 - Avoid connecting fiber optic cables directly to power circuits; maintain separation to prevent interference .
 - Use pre-drilled copper busbars for consistent and professional grounding connections .
 - Ensure all metallic components of the terminal box, racks, and cable trays are bonded to the TGB to maintain a low-impedance path for fault and noise currents .
 - Follow ANSI/TIA-607-B, BICSI TDMM, and NEC guidelines for grounding and bonding in commercial IT environments . By following these practices, the fiber optic terminal box will be safely integrated into the computer room's grounding system, protecting both personnel and sensitive IT equipment while maintaining compliance with industry standards.

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