

Grounding Requirements for Network Cabinets in Low-Voltage Wiring Wells



Overview

NEC 2026 Article 750: Grounding Limited-Energy Systems NEC 2026 Article 750 consolidates grounding and bonding requirements for all limited-energy systems.

Key Takeaways

Network cabinets in low-voltage electrical wells should be grounded using a bonded network connected to the building's low-voltage earth system, following IEC 60364, TIA-607-E, and IEEE guidelines.

Purpose of Grounding: Grounding network cabinets ensures personnel safety, protects equipment from electrical faults, and minimizes electromagnetic interference (EMI) in sensitive data and communication systems. It provides a low-resistance path for fault currents and stabilizes voltage levels across the installation.

Connection to Low-Voltage Earth: Cabinets should be connected to the low-voltage (LV) protective earth system of the building. This involves bonding all exposed conductive parts of the cabinet, racks, trays, and pathways to a common bonding network (CBN) or isolated bonding network (IBN), which in turn is connected to the LV earth at a single point.

Bonding Methods:

- **Mesh Bonding Network (MBN):** Traditionally used under raised floors, forming a grid connecting all equipment to the LV earth. It provides a strong signal reference and reduces noise.

- **Star-Isolated Bonding Network (Star-IBN):** Modern installations often use Star-IBN, where each cabinet or rack is individually bonded to a single point connection (SPC) to the CBN or LV earth. This reduces ground loops and interference .
- **Equipotential Bonding:** All metallic parts within the cabinet and adjacent racks should be bonded to maintain equal potential, preventing voltage differences that could damage equipment or create shock hazards .
- **Resistance Requirements:** The resistance of the cabinet grounding connection should be low enough to allow fault currents to trip protective devices quickly, typically below a few ohms, depending on system design and local regulations . IEC 60364 and IEEE standards provide guidance on maximum permissible earth resistance and coordination with protective devices.
- **Integration with Other Systems:** Network cabinet grounding must interface with:
 - High-voltage (HV) grounding for transformers or switchgear if present.
 - DC power grounding for telecom or data systems.
 - Renewable energy sources like photovoltaic systems, if connected to the facility .
- **Installation Considerations:**
 - Use conductors sized according to fault current and length to minimize voltage drop.
 - Avoid sharp bends and maintain continuous metallic paths.
 - Ensure corrosion-resistant connections and periodic inspection.
 - Follow local codes (e.g., NEC, NFPA 70 in the U.S.) in addition to international standards .
- **Summary:** Proper grounding of network cabinets in low-voltage electrical wells involves connecting all metallic parts to a low-resistance earth via a bonded network, using either mesh or star configurations, ensuring equipotential bonding, and coordinating with protective devices. Compliance with IEC 60364, TIA-607-E, and IEEE recommendations ensures safety, reliability, and minimal interference in network operations .

Article Content

GROUND GRID SPECIFICATIONS

The ground cable shall be supported as shown on this dwg. The grounded end of the ground switch of the Voltage Transformer shall

Principle Cabinet Design EMC and grounding G574e Part 3

Here you can see the proper way to ground the control cables as was instructed in the previous slide. In this picture, the cable

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