Cable trays for low-voltage electrical systems entering the cabinet

Overview

T&B® Cable Tray | ABB With a wide variety of sizes and materials available, T&B cable tray systems are customizable to meet the specific needs of any Cable.

Key Takeaways

Cable trays should be securely connected to low-voltage electrical cabinets using mechanical fittings, proper grounding, and NEC-compliant practices to ensure safety and system stability.Planning and Preparation

Before connecting a cable tray to a low-voltage cabinet, plan the tray route and ensure proper alignment with the cabinet entry point. Consider clearances, load capacity, and cable separation to prevent interference and allow maintenance access (typically at least 12 inches above the tray) . Select a tray type suitable for your cables, such as ladder trays for power cables or ventilated troughs for control and instrumentation cables .

Connection Methods

The most common methods to connect cable trays to cabinets include:

• Splice Plates or Fish Plates: Flat metal plates bolted to the ends of the tray and cabinet flange provide a strong, secure connection. Use appropriate fasteners like bolts, nuts, and washers, ensuring torque specifications are met .

• Clamps or Brackets: Adjustable clamps can secure the tray to the cabinet frame, especially for smaller or lighter trays. Ensure clamps are rated for the tray load .

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• Quick-Connect Systems: Some manufacturers offer snap or twist fittings for rapid installation, though these may be brand-specific . For angled entries or junctions, L, T, or cross-shaped plates can be used to guide cables smoothly into the cabinet .
Grounding and Bonding

If the tray is metallic, it can serve as an equipment grounding conductor (EGC). Ensure the tray is bonded to the cabinet using grounding lugs or bonding jumpers to maintain electrical continuity and comply with NEC Article 392 . This prevents potential shock hazards and ensures proper fault current paths.

Installation Tips
• Align the tray level and flush with the cabinet entry to avoid cable stress .

• Use proper supports (brackets or hangers) spaced according to tray type and load, typically 1.5–3 meters apart .

• Maintain separation between high-power and low-voltage cables to reduce electromagnetic interference .

• Ensure fill limits are not exceeded: 40% for power cables, 50% for control cables .

• For outdoor or sunlight-exposed installations, use UV-resistant cables and allow for thermal expansion with expansion splice plates .
Compliance

Follow NEC Article 392 for all tray installations, including proper cable types, clearances, grounding, and prohibited areas (e.g., hoistways or enclosed spaces) . Proper adherence ensures safety, durability, and easier maintenance. By following these steps, you can achieve a secure, code-compliant connection between cable trays and low-voltage electrical cabinets, ensuring long-term reliability and safety.

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