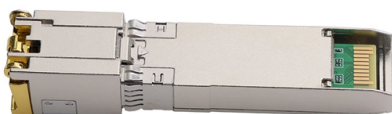


Calculation of grounding for cable tray supports



Overview

Cable Tray Design: Sizing, Fill, and Support SpacingA practical NEC Article 392 cable tray design guide — tray types, fill calculations for single conducto.

Key Takeaways

Metallic cable trays can serve as equipment grounding conductors (EGCs) when properly bonded and sized according to NEC standards, ensuring a continuous low-impedance path for fault currents.Using Cable Trays as Equipment Grounding Conductors

Metallic cable trays, such as steel or aluminum ladder, trough, or channel types, can function as the EGC if all sections and fittings are bonded together using listed connectors or bonding jumpers, creating a continuous electrical path for fault currents (NEC 392.60) . This eliminates the need for a separate grounding conductor in some installations, provided the tray meets the minimum metal cross-sectional area requirements specified in NEC Table 392.60(A) .

Grounding Conductor Options

There are three primary methods to provide grounding in a cable tray system :

- Tray as EGC: The tray itself serves as the grounding path, with all sections bonded together.

- EGC conductor in or on the tray: A separate copper or aluminum conductor runs along the tray and is bonded to each section.
- Individual cable EGCs: Each multi-conductor cable includes its own equipment grounding conductor. When using a separate EGC in aluminum trays, insulated conductors are recommended to prevent electrolytic corrosion, with insulation removed only at bonding points using tin- or zinc-plated connectors .

Sizing the Grounding Conductor

The minimum size of the EGC is determined by NEC Table 250.122, based on the overcurrent protection rating of the circuit. For example, a 100 A circuit typically requires a 10 AWG copper EGC. When the tray itself is used as the EGC, the metal cross-sectional area of the tray must meet or exceed the minimum values in NEC Table 392.60(A), which considers the total area of side rails for ladder or trough trays or the minimum metal area for channel trays .

Bonding Practices

- Bonding clamps are used to connect EGCs to tray sections, ensuring both electrical continuity and mechanical stability under fault conditions .
- Alternate section bonding is acceptable, but continuous bonding is preferred for maximum safety.
- All metallic trays must be grounded according to NEC 250.96, regardless of whether the tray is used as an EGC .

Practical Considerations

- Ensure all tray sections, fittings, and supports are electrically continuous.
- Avoid placing bare copper EGCs in aluminum trays in moist environments; use insulated conductors instead.
- Verify that the tray material and bonding method provide a low-impedance path for fault currents to facilitate proper operation of overcurrent protection devices.
- Regular inspection and maintenance of bonding connections are recommended to maintain system safety and compliance. By following these guidelines, cable tray supports can be safely grounded, providing reliable fault protection and compliance with NEC standards .

Article Content

Cable Tray Systems: NEC Article 392 Installation Guide

Learn about ladder, solid bottom, ventilated trough, wire mesh, and channel trays, fill calculations, permitted cables, support

NEC Standards for Cable Trays: Grounding, Fill Capacity

This article provides a comprehensive framework that governs various aspects of cable tray installations, including

Cable Tray Installation Rules (NEC 392) – Electrical Trader

Core rules for selecting, installing, grounding, and filling cable trays—clearances, materials, separation, and bonding

Free Cable Tray Fill Calculator | NEC & IEC Compliant Sizing | Shielden

Easily calculate cable tray fill ratios with our free tool. Supports mixed cable sizes, NEC 40% rules, and metric/imperial units.

Practices for grounding and bonding of cable trays

If a wire mesh cable tray is supporting cable with a built-in equipment grounding conductor or control or signal cables, then the tray

Equipment Grounding Conductors for Cable Tray Systems

The intent of this article is to review grounding practices for cable tray wiring systems. The Equipment Grounding Conductors are the

Cable Tray SHIB NAL

Cable trays are not raceways, but they are treated as a structural component of a facility's electrical system. Cable trays are a part of

NEMA Standards Publication VE 2-2006

If a wire mesh cable tray is supporting cable with a built-in equipment grounding conductor or control or signal cables, then the tray

Grounding Inspection of Steel and Aluminum Cable Tray Systems

Steel and aluminum cable tray systems are excellent equipment grounding conductors if they are properly designed, specified,

Document DICOS

Supports for cable trays should provide strength and working load capabilities sufficient to meet the load requirement of the cable

Cable Tray Grounding: Power, Instrumentation, and

The purpose of power grounding (Article 250) is to minimize the damage from wiring or equipment ground fault. Cable tray systems

Cable Tray Technical Guide A practical guide to product selection

A practical guide to product selection and installation This guide for engineers and installers has been developed by ABB as a

Practices For Grounding and Bonding of Cable Trays

The document discusses grounding and bonding practices for metallic and non-metallic cable trays. Metallic cable trays must be

Best Practice Guide to Cable Ladder and Cable Tray Systems

This guide covers cable ladder systems, cable tray systems, channel support systems and associated supports intended for the

Cable Tray Installation

Proper planning for installing cable tray includes calculations based on loading, support systems, cable/wire fill and spacing,

Cable Tray Support Spacing: Key Guidelines Explained

We get this question a lot. The safety of your people and the reliability of your electrical system depend on proper

Criteria for Sizing, Designing, Installing and Supporting of Cable-Tray ...

11.2 Expansion fittings, flexible connectors, hinged connectors and non-continuous tray runs shall have a ground bonding strap to

Grounding Requirements for Electrical Cables, Cable Trays, and

Guidelines for grounding electrical cables, busbars, and cable trays in wiring projects, ensuring safety and compliance

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

Contact Us

Continue your research online:

Website: <https://rivomultitrade.co.za>

Technical inquiry: <https://rivomultitrade.co.za/contact.html>

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

