

Article Overview

Multi-layer cable trays must comply with IEC 61537 and related national standards, ensuring proper load capacity, spacing, material selection, and safety for multiple cable layers.

Key Standards and Guidelines

IEC 61537 is the primary international standard for metallic cable tray systems, covering construction, testing, and performance requirements. It specifies mechanical strength, corrosion resistance, electrical continuity, fire resistance, ventilation, and fill ratios, which are critical for multi-layer installations to prevent overloading and overheating . Compliance ensures safety, long-term reliability, and compatibility across different installations.

NEMA (National Electrical Manufacturers Association) provides guidelines for cable tray design in North America, including tray lengths, rung spacing, load capacity, and support intervals. Ladder trays, commonly used for multi-layer setups, are available in widths from 6 to 48 inches with rung spacings of 6, 9, 12, or 18 inches. Wider trays and rung spacing reduce overall strength, so load calculations must account for multi-layer cable weight .

DIN EN 61537 (European equivalent) defines cable support systems, including trays, ladders, and mesh trays. It specifies materials (steel, stainless steel, aluminum), surface treatments for corrosion protection, and installation methods for horizontal and vertical routing, bends, T-pieces, and crossovers . Multi-layer trays must consider support spacing, mounting elements, and accessories to maintain structural integrity.

Design Considerations for Multi-Layer Trays

- o Load Capacity: Each layer adds weight; trays must be rated for combined cable loads and environmental factors like wind or snow .
- o Rung Spacing: Smaller spacing (6-12 inches) is recommended for small-diameter control and instrumentation cables, while larger power cables may require 9 inches or more .
- o Ventilation and Fill Ratio: Proper perforation and spacing prevent heat buildup, which is critical when stacking multiple cable layers .
- o Material Selection: Aluminum, steel, or stainless steel are chosen based on mechanical strength, corrosion resistance, and environmental conditions .
- o Fire and Electrical Safety: Trays must maintain electrical continuity for grounding and meet fire resistance requirements, especially in critical facilities .
- o Support and Span: Multi-layer trays require careful placement of supports and splice plates to prevent sagging and maintain structural integrity .

Best Practices

Multi-layer cable tray standard

- o Separate power and data cables to reduce electromagnetic interference.
- o Use covers or barriers for additional protection in multi-layer configurations.
- o Follow manufacturer-specific guidelines for maximum fill and bending radii to avoid cable damage .
- o Ensure proper earthing and bonding for safety and compliance with electrical codes.

By adhering to IEC 61537, NEMA, and DIN EN 61537 standards, and considering load, spacing, ventilation, and material requirements, multi-layer cable tray systems can be safely and efficiently installed for industrial, commercial, and data center applications .

NEMA VE 1-2017 Specifies requirements for metal cable trays and associated fittings designed for use in accordance with the rules

Explore standard sizes by tray type, understand width and depth limits, and see how to

Explore the cable tray standards of 30 countries across five continents. Learn about the key

Cable Tray Technical Guide A practical guide to product selection and installation This guide for engineers and installers has been

Standard Cable Tray Dimensions Cable tray dimensions are not chosen at random. Across most global markets, they

These documents: ANSI/NEMA VE-1, Metal Cable Tray Systems; NEMA VE-2, Cable Tray Installation Guidelines; and NEMA FG-1,

Telecommunications standard TIA/EIA-569 recommends a minimum of 12-inch access headroom above the cable tray. Question 6: It

The use of ladder type trays as raceways for insulated cables is becoming more prevalent. These raceways are being

We partnered with the Eaton B-Line series experts for this article detailing the NEMA

Cable tray Electrical installations Wiring practice by region or country North American practice United Kingdom practice Regulation of

The cable tray calculator determines the required tray width and type based on the number and size of cables to be

Multi-layer cable tray standard

B. Cable tray systems are defined to include, but are not limited to straight sections of [ladder type] [trough type] [solid bottom type]

Understanding the IEC Standard for Cable Tray Cable trays play a vital role in supporting

Where necessary, cable tray systems and cable ladder systems can be used for the arrangement of cables into groups. This

NEMA Standards Publication VE 2-2018 Cable Tray Installation Guidelines Endorsed by Cable Tray Institute

Cable Management - Cable Tray Systems Standards. Contact Our Dedicated Support Team On +44 (0)121 6016000.

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