

Should fire protection and low-voltage electrical systems be run in the same cable tray



Article Overview

Fire alarm (PLFA) circuits and low-voltage communication or data cables can share the same cable tray under specific conditions, but dedicated pathways or physical separation are strongly recommended for safety and reliability.

Regulatory Perspective

According to the National Electrical Code (NEC) 760.139 (A), power-limited fire alarm (PLFA) circuits are permitted to share a cable tray, raceway, or enclosure with communications circuits or Class 3 circuits, provided the insulation and installation meet code requirements (760.139 B and D) . This allowance applies because both systems are low-voltage, reducing the risk of dangerous voltage interactions. However, circuits such as audio systems using Class 2 or Class 3 wiring may not be included under this provision unless specifically allowed .

Best Practices and Safety Considerations

Even though code permits shared trays, industry best practices recommend physical separation to protect the fire alarm system from mechanical damage, electromagnetic interference (EMI), and accidental faults during installation or maintenance . Key considerations include:...

Article Content

Sep 10, 2025

Can Power Cables And Instrumentation/Communication Cables

While it is technically possible to run power and low-voltage cables in the same tray under strict conditions, segregation

May 26, 2026

Fire Alarm & Data Cable Sharing Same Cable Tray

Cable and conductors of two or more power-limited fire alarm circuits, communications circuits, or Class 3 circuits

Sep 17, 2025

National Electrical Code

The National Electrical Code, 2008 edition The National Electrical Code (NEC), or NFPA 70, is a regionally adoptable standard for

Mar 17, 2026

NEC 2026 Articles 721-723: Class 2/3 Circuits Guide

Complete guide to NEC 2026 Class 2 and Class 3 circuits. Learn how Articles 721-723 reorganized power source, cable, and

Dec 25, 2025

Cable Tray Technical Guide A practical guide to product selection and ...

SOLID-BOTTOM CABLE TRAY Providing additional cable protection, solid-bottom cable tray is sometimes preferred to support and

Apr 27, 2026

Using IEC Standards in Cable Tray and Conduit System Planning

Cable tray and conduit system planning is a vital aspect of modern electrical infrastructure. In industrial plants,

Sep 19, 2025

Low Voltage Installation: Wiring & Cabling Full Guide

Low voltage wiring systems are essential for modern businesses seeking fast, reliable connections that traditional

Aug 15, 2025

fire alarm and power

Alternatively, such conductors must be laid in a partitioned cable tray, or separate conduit / ducting systems must be

Jan 07, 2026

Cable Separation Standards

Why It Matters: High-voltage and limited energy circuits routed too closely can cause cross-talk, distortion, or packet

Feb 09, 2026

Can Fire Alarm Cables Be Installed with Data Cables? Understanding ...

Generally, it is not recommended to share the same cable tray unless the installation is carried out in strict adherence to the

Feb 15, 2026

LV and HV in same conduit | Information by Electrical Professionals

Re: LV and HV in same conduit The NEC does not really consider what some of us call low voltage. What we need to

Jul 19, 2026

Can Control and Line Voltage Wires Be Run in the Same Conduit?

Taking everything into account, if you plan to run the control cable in the same conduit as the line voltage cable, then

Jul 10, 2026

Fire Alarm Wiring in Cable Tray | Information by Electrical ...

I was always under the impression that fire alarm wiring could not be in the same cable tray as other low voltage

Mar 12, 2026

Technical Guidelines for Cable Tray Installation and

Segregation of Power and Signal Cables: Power (high-voltage) and signal (low-voltage) cables should be

Dec 18, 2025

Cable segregation: keeping power, data, and fire-alarm circuits apart ...

Putting power, data, and fire-alarm cables in the same tray to save a route is a false economy. The three circuit

Jul 09, 2026

Extra-low voltage

Extra-low voltage (ELV) is an electricity supply voltage and is a part of the low-voltage band in a range which carries a low risk of

Apr 09, 2026

Low Voltage and Fiber Optic Cabling Guide

Low voltage cabling operates below 50 volts and includes data cables, phone lines, security systems, fire alarm

Jun 29, 2026

THE NEW YORK CITY ELECTRICAL CODE

28-1101.2 Update. No later than the third year after the effective date of this section and every third year thereafter, the commissioner

Jan 19, 2026

Prevent Fire and Electric Hazards When Cable Trays Used

Where cable trays pass through fire-rated partitions, walls, and floors, appropriate fire-stops should be provided to

Mar 18, 2026

Conductors of Different Circuits in Same Cable, Enclosure, or

Conductors from different circuits can share the same cable, enclosure, or raceway under specific conditions. Class 1 circuits and

May 31, 2026

Cabling/Wiring Rules - Fire Secure UK

Correct cabling practices are fundamental to the reliability of life safety, security, and electrical systems. Poor segregation,

Apr 05, 2026

NFPA 70 and Low Voltage Systems | National Training Center

Many low-voltage professionals view NFPA 70 (National Electrical Code) as the domain of electricians. While the bulk of the

May 30, 2026

IEEE Guide for the Design and Installation of Cable Systems in

Abstract: The design, installation, and protection of wire and cable systems in substations are covered in this guide, with the objective

Nov 02, 2025

Separating high and low voltage in the same box

I can't use this as the high voltage and low voltage connect to the same switch. Basically what I'm asking is can a 24

Jan 17, 2026

Low voltage and normal power in same raceway

In general, the "low voltage" conductors or cables cannot be in the same raceway with power conductors. The dimming

May 16, 2026

Fire Alarm wires mixed with other wires | Information by Electrical ...

Can someone clarify if you can mix fire alarm cables with other cables through bridal rings through open ceilings or

Apr 06, 2026

Mixing Cables Over and Under 600V in Cable Tray

At times it becomes necessary, or even desirable, to route medium- or high-voltage cables (greater than 600V) in the

Apr 26, 2026

Low voltage dc and ac high voltage in the same conduit

It is electrical code violation. Low voltage and high voltage should run separately. If you conduit can be divided, it could

Jun 09, 2026

Can You Run High & Low Voltage in Same Conduit? (NEC Rules)

Both low voltage and high voltage wiring need to maintain some distance from each other or be separated by a barrier

Nov 25, 2025

Electrically ignited fires in Low Voltage Installations

This scientific publication is about electrically ignited fires in low voltage electrical installations and ways to avoid the risk of such fires

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