

Cable trays and junction boxes



Overview

→ Pre-assembled AP-9 boxes from ABB are now available for order. We also have pre-assembled boxes from Schneider.

Key Takeaways

Cable trays are generally not installed inside junction boxes; instead, they are connected to junction boxes to route and support cables safely.

Key Considerations

Junction boxes are enclosures used to terminate, interconnect, or branch electrical and instrumentation cables. They provide protection for cable connections and allow for organized distribution of cables from field devices to control or monitoring equipment. Cable trays, on the other hand, are support systems designed to carry and manage multiple cables along horizontal or vertical paths.

They can be made of ladder, mesh, or solid-bottom types and are intended to provide mechanical support, maintain spacing, and protect cables from damage.

Installation Practices

Connection, not containment: Cable trays are typically connected to junction boxes via flanged units or entry points, allowing cables to enter or exit the box while maintaining proper bend radius and spacing. Installing a full cable tray inside a junction box is not standard practice because junction boxes are not designed to support the structural load of a tray system or the weight of multiple cables. Support and routing: Junction boxes may have mounting plates or brackets to support cable entry and exit points, but the tray itself remains external, ensuring easy access for maintenance and compliance with standards.

Standards compliance: Installation should follow applicable standards such as NEC, IEC, NEMA, and ABS Guidance Notes for offshore or industrial applications. These standards emphasize that junction boxes are for interconnection and termination, while cable trays provide continuous support along the cable route.

Practical Implications

Ensure proper alignment between the tray and the junction box to avoid sharp bends that could damage cables. Use barrier strips, covers, or cable protection rings at the junction box entry points to prevent abrasion. Maintain clearances and accessibility for inspection, maintenance, and future cable additions.

In summary, cable trays should terminate at or pass through junction boxes rather than being installed inside them. This approach ensures mechanical support, safety, and compliance with electrical standards while allowing organized cable management.

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