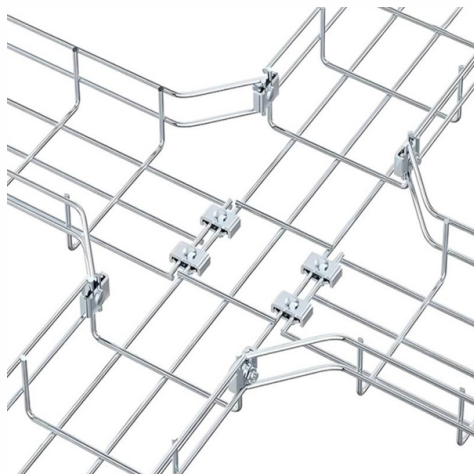


## Laying optical cables in the vertical subsystem



### Overview

Learn more about how to install fiber optic cables. Check out our top 11 tips for fiber to the home installation today!

### Key Takeaways

Vertical optical cables must be securely fixed, maintain proper bend radius, include fireproofing measures, and comply with industry standards for backbone connectivity. Cable Placement and Routing

Vertical subsystem cables, also known as backbone or riser cables, connect the main equipment room to wiring closets on each floor. They are typically installed in cable shafts, riser ducts, or dedicated vertical pathways to ensure protection and accessibility. The routing should avoid sharp bends, excessive tension, and interference with other services, maintaining a minimum bend radius as specified by the cable manufacturer to prevent signal loss or fiber damage .

#### Fixation and Support

To prevent sagging or slipping, cables must be firmly secured at multiple points along the vertical path. Common methods include nylon cable ties, steel clips, or cable brackets attached to the shaft walls. Fixation should be applied at the top, middle, and bottom of each floor section to maintain stability and prevent mechanical stress .

#### Slack and Length Management



An appropriate amount of slack should be reserved at both ends of the cable, typically 5–10 meters, to allow for terminations, splicing, and future maintenance. Additional slack may be required for special configurations or equipment placement .

### Fire and Safety Considerations

Vertical cabling must comply with fire safety regulations, including the use of fire-resistant or low-smoke zero-halogen (LSZH) cables. All penetrations through floors or walls should be sealed with fireproof materials to prevent the spread of fire and maintain building integrity. Moisture-proofing measures should also be applied where necessary .

### Standards and Compliance

Installation should follow recognized standards such as FOA guidelines, ITU-T recommendations (e.g., G.652, G.957), and local building codes. These standards cover fiber characteristics, system compatibility, grounding, bonding, and riser-specific installation practices . Compliance ensures signal integrity, safety, and long-term reliability.

### Handling and Supervision

Cables must be handled carefully to avoid kinking, crushing, or excessive pulling tension. Installation should be supervised by trained personnel, with pre- and post-laying inspections to verify cable condition, proper routing, and adherence to design specifications. Documentation of cable paths, splices, and terminations is recommended for future maintenance .

### Summary

Key requirements for vertical optical cable installation include:

- Secure fixation along the vertical path
- Maintaining proper bend radius and tension limits
- Reserving sufficient slack for terminations and maintenance
- Fireproofing and moisture protection at floor penetrations
- Compliance with FOA, ITU-T, and local building standards
- Careful handling and supervised installation with proper documentation Following these practices ensures a reliable, safe, and maintainable vertical optical backbone for multi-floor buildings.

## Article Content

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Optical cable classification and wiring knowledge

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